

DE-PS68-88-EG4581

**SOLICITATION NUMBER**

**INNOVATIVE CLEAN COAL TECHNOLOGY PROGRAM**



**DEPARTMENT OF ENERGY**  
**ASSISTANT SECRETARY, MANAGEMENT AND ADMINISTRATION**  
**PROCUREMENT AND ASSISTANCE MANAGEMENT**

**OFFICE OF PROCUREMENT OPERATIONS**

**OPENING DATE: FEBRUARY 22, 1988**

**CLOSING DATE: MAY 23, 1988**

Use this label for Mailing

DEPARTMENT OF ENERGY  
OFFICE OF PROCUREMENT OPERATIONS  
ROOM 1J-005 - FORRESTAL BUILDING (MA-451)  
1000 INDEPENDENCE AVENUE, S.W.  
WASHINGTON, D.C. 20585

ATTN: DOCUMENT CONTROL SPECIALIST

Offer in Response to RFP No. DE-PS01-88FE61530  
Closing Date: MAY 23, 1988 Closing Time: 4:30 P.M.

Use this label if Hand Delivered

DEPARTMENT OF ENERGY  
OFFICE OF PROCUREMENT OPERATIONS  
ROOM 1J-005 - FORRESTAL BUILDING (MA-451)  
1000 INDEPENDENCE AVENUE, S.W.  
WASHINGTON, D.C. 20585

ATTN: DOCUMENT CONTROL SPECIALIST

**NOTICE TO COURIER:** It may not be possible to deliver this package to Room 1J-005 outside of the hours of 8:30 AM to 5:00 PM workdays. Delivery to any other location, including the central delivery area, may result in the late receipt in Room 1J-005 and is strongly discouraged.

Offer in Response to RFP No. DE-PS01-88FE61530  
Closing Date: MAY 23, 1988 Closing Time: 4:30 P.M.



**Department of Energy**  
Washington, DC 20585

February 22, 1988

**PROGRAM OPPORTUNITY NOTICE FOR INNOVATIVE  
CLEAN COAL TECHNOLOGY DEMONSTRATION PROJECTS**

PON NUMBER DE-PS01-88FE61530

**Prospective Offerors:**

This Program Opportunity Notice (PON) is in response to the Innovative Clean Coal Technology (ICCT) portion of Public Law No. 100-202, "An Act Making Appropriations for the Department of Interior and Related Agencies for the Fiscal Year Ending September 30, 1988, and for Other Purposes." Through this PON, the Department of Energy (DOE) is soliciting proposals for financial assistance required to conduct cost shared ICCT projects to demonstrate technologies that are capable of being commercialized in the 1990s, that are more cost-effective than current technology, and that are capable of achieving significant reduction of SO<sub>2</sub> and/or NO<sub>x</sub> emissions from existing coal-burning facilities, particularly those that contribute to transboundary and interstate pollution.

On January 28, 1988, a draft PON was issued, and public comments were requested by February 5, 1988. The comments received were carefully reviewed and used in considering modifications to the original draft PON. Accordingly, prospective offerors are advised that the PON enclosed with this cover letter differs in numerous aspects from the draft PON.

The following is a summary of the salient elements of this PON, but not an integral part of the enclosed PON. In the event of any conflict between this PON cover letter and the enclosed PON document, the data and information in the PON shall prevail.

Each project will consist of three phases: (1) Design and Permitting, (2) Construction and Startup, and (3) Operation and Disposition. The period of performance is to be proposed by the offeror. (See Section 4.2.5 regarding already completed phases.)

- more -

Proposals must be submitted in accordance with the instructions in Sections 3 and 4. Each of the four proposal volumes should be bound separately. The proposals must be received at the place designated in Section 3.5, "Time, Date, and Place Proposals Are Due," not later than 4:30 p.m. local time, Washington, D.C., on May 23, 1988.

A Preproposal Conference for this PON will be held on March 15, 1988, at 10:00 a.m. local Washington, D.C., time at the Department of Commerce Auditorium, Herbert C. Hoover Building, 14th Street, N.W., and Constitution Ave. (Enter through the Main Lobby on 14th Street), Washington, D.C. 20004.

Only proposals that can satisfy the Qualification Criteria and pass Preliminary Evaluation will be considered for Comprehensive Evaluation. Technical, Business and Management, and Cost evaluation criteria are provided in Section 5. The program policy factors applicable to this PON are described in Section 5.5.

Depending on the evaluated potential of proposals submitted, one or more cooperative agreements may be awarded as a result of this PON.

This PON does not commit the Government to pay any costs incurred in connection with any proposal, to procure or contract for any services, or to provide financial assistance to any offeror. The Government reserves the right, without limitation, to accept or reject any or all proposals regardless of the terms of the original proposal, and to request additional clarifying information.

DOE may award a cooperative agreement based on proposals received, without discussion of such proposals with the offerors. Therefore, each proposal to DOE should reflect the most favorable terms, from technical, cost, and business and management standpoints, that the offeror can submit.

Offerors are advised that an Innovative Clean Coal Technology project selected for financial assistance as a result of this PON will be subject to the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and related DOE compliance procedures. Should an offeror's proposal be selected, the offeror will be asked to provide information to be used in preparing an environmental report to serve as the basis for an environmental assessment (EA) or an environmental impact statement (EIS). See Section 3.27, "National Environmental Policy Act (NEPA) Strategy," for more information.

All offerors are required to prepare and include in their proposals an abstract of the highlights of their proposed demonstration project, that may be released to the public at any time, in whole or in part. See Section 4.3.3, "Public Abstract."

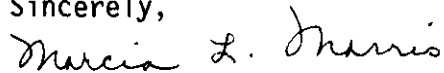
You are cautioned that certain proposal material submitted may become subject to disclosure to the public pursuant to the provisions of the Freedom of Information Act, as amended. See Section 3.28, "Proprietary Data or Confidential Business Information."

The designated Government Representative for this PON is Mr. Herbert D. Watkins. All communications should cite the PON number and be directed to his attention at the address prescribed in Section 3.4, "DOE Issuing Office," or by telephone call to (202) 586-1026.

Your proposal must remain valid and authorize a period of time for acceptance by the Government of not less than 365 calendar days from the date specified above for receipt of proposals. Furthermore, you are cautioned that late proposals, modifications, and withdrawals will be treated in accordance with Section 3.36, "Late Applications, Amendments of Applications, and Withdrawals of Applications."

Please complete the "Intention to Propose" form provided at Appendix B at the earliest practicable date. No other material should be returned if you do not intend to submit a proposal.

Sincerely,



Marcia L. Morris  
Deputy Director  
Office of Procurement Operations

Enclosures

## CONTENTS

<u>PON Section</u>	<u>Page</u>
1. <u>DEPARTMENTAL OBJECTIVE</u>	1
1.1 INTRODUCTION AND BACKGROUND	1
1.2 PON OBJECTIVE	3
2. <u>PROGRAM GUIDELINES</u>	5
3. <u>TERMS, CONDITIONS AND NOTICES TO OFFERORS</u>	7
3.1 CONTENT OF RESULTING AGREEMENT	7
3.2 PROGRAM OPPORTUNITY NOTICE (PON) NUMBER	7
3.3 DATE OF PON ISSUANCE	7
3.4 DOE ISSUING OFFICE	7
3.5 TIME, DATE AND PLACE PROPOSALS ARE DUE	7
3.6 AVAILABILITY OF FUNDS	8
3.7 OFFER ACCEPTANCE PERIOD	8
3.8 NUMBER OF AWARDS	8
3.9 SOLICITATION DEFINITIONS	9
3.10 AN EQUAL RIGHTS NOTE	9
3.11 ... LOANS FOR BID AND PROPOSAL PREPARATION ...	9
3.12 INTENTION TO PROPOSE	10
3.13 FALSE STATEMENTS	10
3.14 EXPENSES RELATED TO OFFEROR SUBMISSIONS	10
3.15 AMENDMENTS TO THE PON	11
3.16 ACKNOWLEDGEMENT OF AMENDMENTS TO THE PON	11
3.17 PREPROPOSAL CONFERENCE	11
3.18 NOTICE OF RIGHT TO REQUEST A PATENT WAIVER	12
3.19 CLASSIFIED MATERIAL	12
3.20 RESPONSIBLE PROSPECTIVE PARTICIPANTS	12
3.21 POST-SELECTION ACTIVITY UNDER THIS SOLICITATION	13
3.22 DISCUSSIONS AND/OR SITE VISITS WITH OFFERORS	14
3.23 INFORMATION OF AWARD	14
3.24 DISPOSITION OF PROPOSALS	15
3.25 DISPOSITION OF PON DOCUMENTS	15
3.26 PREVIOUS RESPONDENTS TO THE EARLIER "CLEAN COAL" PROGRAM ANNOUNCEMENT	15
3.27 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) STRATEGY	15
3.27.1 Pre-Selection Programmatic Environmental Impact Analysis	16
3.27.2 Pre-Selection Project-Specific Environmental Review	17
3.27.3 Post-Selection NEPA Review	18
3.27.4 Post-Award Environmental Monitoring Review	18

## CONTENTS Continued

3.28	PROPRIETARY DATA OR CONFIDENTIAL BUSINESS INFORMATION	20
3.29	PREPARATION OF OFFERS	21
3.30	PROPOSAL STRUCTURE	21
3.31	COVER SHEET INSTRUCTIONS	22
3.32	PROPOSAL PACKAGING	23
3.33	PROPOSAL DELIVERY INFORMATION	24
3.34	FUNDS TRANSFER	25
3.35	UNNECESSARILY ELABORATE PROPOSALS	25
3.36	LATE APPLICATIONS, AMENDMENTS OF APPLICATIONS, AND WITHDRAWALS OF APPLICATIONS	26
3.37	EXPLANATION TO PROSPECTIVE OFFERORS	28
3.38	FAILURE TO SUBMIT PROPOSAL	28
3.39	AWARD OF FINANCIAL ASSISTANCE	29
3.40	RIGHTS IN TECHNICAL DATA	30
3.41	REPORTS TO CONGRESS	32
4.	<u>PROPOSAL PREPARATION INSTRUCTIONS</u>	35
4.1	PREPARATION OF VOLUME I: QUALIFICATION PROPOSAL	35
4.2	PREPARATION OF VOLUME II: TECHNICAL PROPOSAL	39
4.2.1	Organization of Volume II: Technical Proposal	39
4.2.2	Discussion of Commercialization Factors	40
4.2.3	Discussion of the DOE Cost and Environmental Performance Methodology	40
4.2.4	Contents of the Technical Proposal	44
4.2.5	Discussion of Demonstration Project Factors	59
4.2.6	Summary of Exceptions, Deviations, and Assumptions	70
4.3	PREPARATION OF VOLUME III: BUSINESS AND MANAGEMENT PROPOSAL	71
4.3.1	General Instructions	71
4.3.2	Application Form and Assurance of Compliance	71
4.3.3	Public Abstract	71
4.3.4	Project Summary Form	72
4.3.5	Specific Business and Management Discussion	73
4.3.6	Summary of Exceptions, Deviations, and Assumptions	79
4.4	PREPARATION OF VOLUME IV: COST PROPOSAL	83
4.4.1	General Instructions	83
4.4.2	Format and Content	85

## CONTENTS Continued

5.	<u>EVALUATION CRITERIA AND PROGRAM POLICY FACTORS</u>	93
5.1	INTRODUCTION	93
5.2	QUALIFICATION	93
5.3	PRELIMINARY EVALUATION	94
5.4	COMPREHENSIVE EVALUATION	95
5.4.1	Technical Evaluation Criteria	96
5.4.1.1	<i>Commercialization Factors</i>	97
5.4.1.2	<i>Demonstration Project Factors</i>	97
5.4.1.3	<i>Relative Importance of Technical Evaluation Criteria</i>	99
5.4.2	Business and Management Evaluation Criteria	99
5.4.2.1	<i>Relative Importance of Business and Management Criteria</i>	100
5.4.3	Cost Evaluation Criteria	101
5.4.4	Relative Importance of Proposal Volumes	101
5.5	PROGRAM POLICY FACTORS	101
5.6	OTHER CONSIDERATIONS	102
6.	<u>GOVERNMENT FINANCIAL PARTICIPATION</u>	105
6.1	AMOUNT OF COST SHARING REQUIRED	105
6.2	PROJECT COSTS NOT ALLOWED FOR COST SHARING PURPOSES	105
6.3	ALLOWABLE PROJECT COSTS FOR COST SHARING PURPOSES	107
6.4	RECOVERY OF GOVERNMENT'S INVESTMENT	109
6.5	COST OVERRUNS	110
6.6	FINANCIAL RECORDS	111

## APPENDICES

- A. Congressional Guidance
- B. Intention to Propose Form
- C. Proposal Cover Sheets
  - Volume I: Qualification Discussion
  - Volume II: Technical Proposal
  - Volume III: Business and Management Proposal
  - Volume IV: Cost Proposal
- D. Qualification Criteria Certifications
- E. Public Abstract Form
- F. Project Summary Form
- G. Federal Assistance Application Form
- H. Assurance of Compliance: Nondiscrimination in Federally Assisted Programs
- I. The DOE Cost and Environmental Performance Methodology
- J. Information Requirements for the National Environmental Policy Act
- K. Cost Proposal Format (SF 1411) and Exhibits
- L. Uniform Reporting System for Federal Assistance
- M. Model Cooperative Agreement
- N. Environmental Monitoring Plan Guidelines
- O. Detailed Management Plan

## 1. DEPARTMENTAL OBJECTIVE

### 1.1 INTRODUCTION AND BACKGROUND

On December 22, 1987, Pub. L. No. 100-202, "An Act Making Appropriations for the Department of the Interior and Related Agencies for the Fiscal Year Ending September 30, 1988, and for Other Purposes" (the "Act"), was signed into law. This Act, among other things, provides funds to conduct cost-shared innovative clean coal technology (ICCT) projects to demonstrate emerging clean coal technologies that are capable of retrofitting or repowering existing facilities. This Program Opportunity Notice (PON) is issued in accordance with the requirements of that Act.

The Act makes available a total of \$575 million for this program, as follows: \$50 million in Fiscal Year 1988 and \$525 million in Fiscal Year 1989. Of these monies, \$32.512 million will be set aside for Program Direction and \$6.782 million will be set aside for the Small Business and Innovative Research Program and unavailable for projects. All of the remaining monies, \$535.706 million, will be available for award under this PON.

The Act requires that DOE issue a "general request for proposals" for the ICCT Program within 60 days of the date of enactment, provides 90 days from issuance of that request for the proposals to be submitted, and requires the selection of projects for negotiation not later than one hundred sixty days after receipt of proposals. Pub. L. No. 100-202, in its reference to Pub. L. No. 99-190, also specifically addresses levels and forms of cost sharing applicable to projects proposed under this PON (see Section 6, "Government

Financial Participation"). The legislative history of Pub. L. No. 100-202 suggests project selection criteria for consideration in the development of this PON.

The Innovative Clean Coal Technology Program is related to the decision by President Reagan on March 18, 1987, to seek \$2.5 billion to fund the demonstration of innovative clean coal technologies over a five-year period, provided that appropriate projects are proposed that meet, among other things, cost sharing requirements similar to those provided in the earlier (Feb. 17, 1986) Clean Coal Technology (CCT) solicitation. Accordingly, the Administration amended the FY 1988 budget request and supporting "outyear" estimates for the CCT Program, such that the Administration had requested the remaining \$350 million from the CCT Reserve in FY 1988, and advanced appropriations of \$500 million each year for Fiscal Years 1989 through 1992, for demonstration projects. However, Pub. L. No. 100-202 has established a total funding level of \$575 million. These funds will be used in a single solicitation which is the subject of this PON. The cost sharing requirements ensure that industry will invest an equal or greater amount to stimulate deployment of ICCT.

In addition to the announcement of the intention to seek funding for the ICCT solicitation, President Reagan, on March 18, 1987, also stated that projects will be selected, as fully as practicable, using the criteria recommended by the Special Envoys on Acid Rain, Drew Lewis of the United States, and William Davis of Canada. President Reagan had appointed Drew Lewis to the position of U.S. Special Envoy on Acid Rain in March of 1985, and, at the same time, Prime Minister Brian Mulroney appointed William Davis as the Canadian Special Envoy. Charged with the responsibility "to assess the international environmental problems associated with transboundary air pollution, and then recommend

actions that would solve them," the appointees in January of 1986 issued the Joint Report of the Special Envoys on Acid Rain, also popularly known as "the Lewis/Davis Report". The Special Envoys provided twelve recommendations, the first one of which was that the:

U.S. government should implement a five-year, five-billion-dollar control technology commercial demonstration program. The federal government should provide half the funding ... for projects which industry recommends, and for which industry is prepared to contribute the other half of the funding.

Excerpts from the aforementioned legislation and accompanying Congressional committee reports are provided in Appendix A, "Congressional Guidance". The Appendix also includes excerpts from Pub. L. No. 99-190.

## 1.2 PON OBJECTIVE

The specific objective of this PON is to solicit proposals to conduct cost shared innovative clean coal technology projects to demonstrate technologies that are capable of being commercialized in the 1990s, that are more cost-effective than current technologies, and that are capable of achieving significant reduction of SO<sub>2</sub> and/or NO<sub>x</sub> emissions from existing coal burning facilities, particularly those that contribute to transboundary and interstate pollution.

## 2. PROGRAM GUIDELINES

The following program guidelines are provided to increase the proposer's understanding of the Innovative Clean Coal Technology Program and to assist in the preparation of proposals.

1. The projects in this program will be industry projects assisted by the Government. The Congress has stipulated that Government funding shall not exceed 50% of total project cost. Further guidance on financial participation is contained in Section 6 of this PON.
2. Candidate technologies must be applicable to existing coal-burning facilities. However, the demonstration projects can be at new ("grass-roots") facilities, as long as the technology is applicable to existing coal-burning facilities. Demonstration projects also may be conducted at existing oil- or gas-fired facilities, as long as coal is used and the technology is applicable to existing coal-fired facilities.

The technology must be either capable of being retrofitted to existing facilities or capable of repowering existing facilities. For purposes of this PON, retrofit technologies are those technologies used to modify existing facilities to reduce SO<sub>2</sub> and/or NO<sub>x</sub> emissions, which are acid rain precursors. Repowering technologies replace a significant portion of the original facility and, in addition to achieving significant emissions reductions, often increase capacity, extend the life of the plant, and improve the efficiency of the system.

Retrofit technologies must have the potential to reduce significantly emissions of  $\text{SO}_2$  and  $\text{NO}_x$  and minimize losses in efficiency. Retrofit technologies such as advanced coal cleaning, limestone injection multi-stage burners, slagging combustors, gas reburning, in-duct sorbent injection, coal-water mixtures, and advanced flue gas cleanup, used separately or in combination, are expected to control  $\text{SO}_2$  and/or  $\text{NO}_x$  emissions.

Repowering technologies must have the potential to reduce significantly emissions of  $\text{SO}_2$  and/or  $\text{NO}_x$ , improve efficiency, and expand the capacity for energy production. Repowering technologies, such as integrated gasification combined cycle (IGCC) and fluidized bed combustion (FBC) are expected to reduce both  $\text{SO}_2$  and  $\text{NO}_x$  emissions.

3. The PON is open to all market applications of innovative clean coal technologies that can lead to reduced emissions of  $\text{SO}_2$  and/or  $\text{NO}_x$  from existing coal-burning facilities. This includes applications for utilities, industry, commercial and residential markets, and transportation.
4. In this PON, the terms "coal-burning" and "coal-fired" include coal utilization in existing facilities where coal is presently being used.
5. The evaluation criteria are tailored to be consistent with Congressional guidance and, as fully as practicable, with the recommendations of the Special Envoys on Acid Rain. Additionally, full consideration has been given to the recommendations and advice of the Innovative Control Technology Advisory Panel, the Vice President's Task Force on Regulatory Relief, and the ICCT public meetings that were convened in August and September, 1987.

### 3. TERMS, CONDITIONS AND NOTICES TO OFFERORS

#### 3.1 CONTENT OF RESULTING AGREEMENT

Any agreement resulting from this PON will be a cost shared Cooperative Agreement based on the Model Cooperative Agreement provided as Appendix M.

#### 3.2 PROGRAM OPPORTUNITY NOTICE (PON) NUMBER

DE-PS01-88FE61530

#### 3.3 DATE OF PON ISSUANCE

February 22, 1988

#### 3.4 DOE ISSUING OFFICE

Department of Energy  
Office of Procurement Operations  
Contract Operations Division "A" (MA-452.1)  
Room Number 1I-065  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585

Point of Contact: Herbert D. Watkins (Procurement Member, Source  
Evaluation Board)

Telephone: (202) 586-1026

#### 3.5 TIME, DATE AND PLACE PROPOSALS ARE DUE

Proposals must be received at:

U.S. Department of Energy  
Office of Procurement Operations  
Forrestal Building, Room 1J-005  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585  
ATTN: Document Control Specialist (MA-451)

by NO LATER THAN 4:30 p.m., Washington, D.C. time, on May 23, 1988. (CAUTION: See Section 3.36, "Late Applications, Amendments of Applications, and Withdrawals of Applications.") This Program Opportunity Notice (PON) contains pre-printed labels that should be used for mailing or hand delivering proposals.

### 3.6 AVAILABILITY OF FUNDS

The Government's share of any resulting project costs is subject to the availability of funds. These funds will be available to cover obligations in accordance with the allocations provided in Pub. L. No. 100-202. Under the Act, funds appropriated for this program will remain available until expended. However, cost sharing by the Government is contingent upon the continued availability of appropriated funds for this program.

Funding to cover the Government's share of Cooperative Agreements will be provided on an incremental basis.

### 3.7 OFFER ACCEPTANCE PERIOD

The minimum offer acceptance period must be 365 days after the deadline for receipt of proposals, as stated in Section 3.5, "Time, Date, and Place Proposals are Due."

### 3.8 NUMBER OF AWARDS

It is anticipated that there will be multiple awards resulting from this solicitation.

### 3.9 SOLICITATION DEFINITIONS

"Offer" means "proposal" or "application." "Offeror" means "proposer" or "applicant." "Solicitation" means this Program Opportunity Notice (PON). "Contractor" means Participant, and "Contract" means the resulting Cooperative Agreement. "Participant" means the legal entity that is responsible for all aspects of project performance under the Cooperative Agreement. The use of the term "subcontractor" in any of the provisions means contractor to the Participant and all tiers of subcontractor thereunder.

### 3.10 AN EQUAL RIGHTS NOTE

Wherever, in the PON or Cooperative Agreement, "man," "men," or their related pronouns may appear, either as words or as parts of words (and other than with obvious reference to named male individuals), they have been used for literary purposes and are meant in their generic sense (i.e., to include all humankind - both female and male sexes).

### 3.11 NOTICE OF POSSIBLE AVAILABILITY OF LOANS FOR BID AND PROPOSAL PREPARATION BY MINORITY BUSINESS ENTERPRISES SEEKING DOE CONTRACTS AND ASSISTANCE (10 C.F.R. 800; 46 Fed. Reg. 44686 AND 48 Fed. Reg. 17573) (1984)

Section 211 of the DOE Organization Act (42 U.S.C. 7141) authorizes DOE to provide loans to minority business enterprises to assist them in their efforts to participate in DOE acquisition and assistance programs. The loans are to enable the preparation of bids or proposals for DOE contracts and assistance awards and for first- and second-tier subcontracts with DOE operating contractors.

The loans are limited to 75% of the allowable costs incurred in preparing such proposals. The award of these loans is subject to the availability of

appropriations. DOE does not warrant that such loans can be made available in sufficient time to prepare a proposal for this PON. This loan program includes provisions for a preliminary review of the application for proposal preparation assistance in advance of a specific loan request.

Information regarding loan availability, eligibility criteria, and how to apply may be obtained from:

San Francisco Operations Office, U.S. DOE  
1333 Broadway  
Oakland, California 94612  
Attn: Minority Loan Program Office  
Tel. (415) 273-6403

### 3.12 INTENTION TO PROPOSE

Please complete the "Intention to Propose" form in Appendix B of this PON and mail it to the address provided on the form by the earliest practical date.

### 3.13 FALSE STATEMENTS

Proposals must set forth full, accurate, and complete information as required by this PON (including all appendices and attachments). The penalty for making false statements in proposals is prescribed in 18 U.S.C. 1001.

### 3.14 EXPENSES RELATED TO OFFEROR SUBMISSIONS

This PON does not commit the Government to pay any costs incurred in the preparation or submission of any proposal, including, but not limited to, studies or designs necessary for the preparation thereof, or to acquire or contract for any services.

### 3.15 AMENDMENTS TO THE PON

The only method by which any term of this PON may be modified is by an express, formal amendment to the PON generated by the issuing office. No other communication made at any scheduled preproposal conference or during discussions, whether oral or in writing, will modify or supersede the terms of this PON. Receipt of an amendment to the PON by an offeror must be acknowledged in accordance with Section 3.16, "Acknowledgement of Amendments to the PON."

### 3.16 ACKNOWLEDGEMENT OF AMENDMENTS TO THE PON

Offerors shall acknowledge receipt of any amendment to this PON (a) by signing and returning the amendment, or (b) by letter or telegram. The Government must receive the acknowledgement prior to the time and date specified for receipt of offers.

### 3.17 PREPROPOSAL CONFERENCE

A Preproposal Conference for this PON will be held on March 15, 1988 at 10:00 a.m. local Washington, D.C. time in the U.S. Department of Commerce Auditorium in Washington, D.C. (not at the Forrestal Building; see the address at the end of this section). The purpose is to provide an opportunity for prospective offerors to gain a better understanding of the objectives and requirements of this PON. Questions related to the PON should be submitted in writing to the Source Evaluation Board Procurement Member designated in the PON cover letter, and should be received by him not later than March 8, 1988. Seating will be available on a first come, first served basis.

The Preproposal Conference will be held at the following location:

Department of Commerce Auditorium  
Herbert C. Hoover Building  
14th Street, N.W., & Constitution Ave.  
(Enter the Main Lobby from 14th St., N.W.)  
Washington, D.C. 20004

3.18 NOTICE OF RIGHT TO REQUEST A PATENT WAIVER

In accordance with applicable statutes and the Department of Energy Financial Assistance Regulations, offerors that are not small businesses or nonprofit organizations have the right to request, in advance or within 30 days after the effective date of the Cooperative Agreement, a waiver of all or any part of the rights of the United States in subject inventions.

Small businesses and nonprofit organizations need not request a waiver. The Patent Rights Clause provided in 10 C.F.R. 600.118(b)(1), which permits the recipient of financial assistance to elect to retain title to subject inventions, will be included in the Cooperative Agreements of small businesses and nonprofit organizations.

3.19 CLASSIFIED MATERIAL

Performance under the proposed award is not anticipated to involve access to classified material.

3.20 RESPONSIBLE PROSPECTIVE PARTICIPANTS

- (a) The general and additional minimum standards for responsible prospective participants set forth at 48 CFR 9.1 and 48 CFR 909.104-70 are applicable to this PON.

- (b) DOE may conduct preaward surveys in accordance with 48 CFR 9.106, solicit, from available sources, relevant information concerning the offeror's record of past performance, and use such information in making determinations of prospective offeror responsibility.

### 3.21 POST-SELECTION ACTIVITY UNDER THIS SOLICITATION

After selection has been announced, DOE will contact each selected proposer to mutually establish a schedule for negotiation which will include specific milestones. It must be recognized that the informational requirements for award differ from those required for proposal submittal, evaluation and selection. Prior to award, the following items must have been approved by DOE:

- o Documentation establishing the formation of the legal entity responsible for the project
- o Projected Repayment Schedule (see PON Section 6)
- o Detailed management plan (see PON Appendix O)
- o Firm financing agreements in place through the first decision point (completion of the preliminary design)
- o Detailed financing plan for the entire project
- o Legally binding site agreement(s) in place

The costs incurred by the offeror, at his risk, between selection and award, for the acquisition of information to satisfy NEPA requirements (see PON Section 3.27, "National Environmental Policy Act (NEPA) Strategy") and in the preparation of material requested by DOE and identified as required for negotiation, may be reimbursed in the same ratio as the cost share for the total project, upon signing of a cooperative agreement (see PON Section 6, "Government Financial Participation").

It should be noted that if negotiations do not proceed in a timely manner, DOE may terminate negotiations (i.e., deselect that project). The circumstances under which DOE may deselect a project include, but are not limited to, the following:

1. DOE determines that the prospective participant is not meeting agreed upon negotiation milestones.
2. DOE determines that the prospective participant is unable to meet his financial commitment to the project.
3. An impasse in negotiations is reached.
4. The proposed site is no longer available and an alternative site, acceptable to DOE, has not been identified.
5. The prospective participant withdraws his proposal.

Upon completion of activities up to the first decision point following award (completion of preliminary design), further costs may be shared only after DOE has notified the participant that the NEPA process has been successfully completed. DOE will agree to proceed beyond that point only if financing is in place for the entire project.

### 3.22 DISCUSSIONS AND/OR SITE VISITS WITH OFFERORS

Written or oral discussions, or site visits, may be conducted with any or all of the offerors. Offerors will be notified of the date, time and place for any oral discussions or site visits.

### 3.23 INFORMATION OF AWARD

Written notice will be provided to unsuccessful offerors. Information about awards will be made publicly available.

### 3.24 DISPOSITION OF PROPOSALS

Proposals will not be returned unless they are withdrawn in accordance with Section 3.36, "Late Applications, Amendments of Applications, and Withdrawals of Applications."

### 3.25 DISPOSITION OF PON DOCUMENTS

Drawings, specifications, and other documents supplied by DOE with the PON may be retained by the offeror, except for documents that are required to be completed and returned as a part of the proposal.

### 3.26 PREVIOUS RESPONDENTS TO THE EARLIER "CLEAN COAL" PROGRAM ANNOUNCEMENT

Prospective Offerors are advised that this PON is not an extension or duplication of the November 1986 "Clean Coal Technology Program Announcement" for informational proposals for projects employing emerging clean coal technologies that are capable of retrofitting, repowering, or modernizing existing facilities. Proposals submitted in response to the earlier announcement will not be evaluated or considered in any way with regard to this PON. Prospective offerors are hereby instructed that they must submit a new proposal if they wish to be considered for financial assistance.

### 3.27 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) STRATEGY

An overall strategy for compliance with the National Environmental Policy Act (NEPA) has been developed for the Innovative Clean Coal Technology Program, consistent with the Council on Environmental Quality (CEQ) NEPA regulations (40 CFR 1500-1508) and the DOE guidelines for compliance with NEPA (45 Fed. Reg. 20, 694 (1980)). This strategy includes both programmatic and

project-specific environmental impact considerations, during and subsequent to the selection process. However, in light of the extremely tight schedule imposed by the Innovative Clean Coal Technology legislation (Pub. L. No. 100-202), some modification will be necessary to the normally applicable documentation and public review requirements. Moreover, the confidentiality requirements of the competitive PON process place certain restrictions on the NEPA review.

Therefore, DOE will follow the procedures described below to ensure that environmental factors are fully evaluated and integrated into the decision making process to satisfy its NEPA responsibilities. Offerors shall submit both programmatic and project-specific environmental data and analyses as a discrete part of their proposal. DOE will independently evaluate the environmental data and analyses submitted by offerors, to the maximum extent possible, and will develop supplemental information and perform analyses as necessary for reasoned decision making. The major elements of the NEPA strategy are discussed below.

#### 3.27.1 Pre-Selection Programmatic Environmental Impact Analysis:

DOE will prepare a comparative programmatic environmental impact analysis, based on information provided by the offerors and supplemented by DOE, as necessary. This environmental analysis will be provided to the Source Selection Official to ensure that relevant environmental consequences of the Innovative Clean Coal Technology Program and reasonable programmatic alternatives are evaluated in the selection process. The analysis will include the maximum potential change in principal air emissions, water effluents, and solid wastes that might be produced regionally and nationally within the U.S. in the year 2010 if each technology proposed were to achieve

its anticipated maximum U.S. market. The projected environmental impacts of anticipated commercialization of the candidate technologies will be discussed. Such discussion will address, in qualitative terms, unresolved environmental issues, identify areas where important environmental information is incomplete or unavailable, and evaluate tradeoffs between short-term and long-term effects, to the extent possible.

### 3.27.2 Pre-Selection Project-Specific Environmental Review:

For proposals that undergo comprehensive evaluation, DOE will prepare and consider before the selection of proposals an environmental impact analysis which will focus on environmental issues pertinent to decision making. Such analysis will summarize the strengths and weaknesses of each proposal against the environmental evaluation criteria including, to the maximum extent possible, a discussion of alternative sites and/or processes reasonably available to the offeror, a brief discussion of the environmental impacts of each proposal, practicable mitigating measures, and, to the extent known, a list of permits which must be obtained in implementing the proposal.

This environmental impact analysis will be provided to the Source Selection Official. In addition, DOE will document the consideration given to environmental factors in a publicly available selection statement to record that the relevant environmental consequences of reasonable alternatives have been evaluated in the selection process. This selection statement will be filed with the Environmental Protection Agency, in accordance with the DOE NEPA guidelines.

### 3.27.3 Post-Selection NEPA Review:

Upon award of federal financial assistance under this PON, offerors will be required to submit the environmental information specified in Appendix J, "Information Requirements for the National Environmental Policy Act." This detailed site and project-specific information will be used as the basis for site-specific NEPA documents to be prepared by DOE for each selected project. Such NEPA documents shall be prepared, considered, and published in full conformance with the requirements of 40 CFR Parts 1500-1508 and in advance of a decision by DOE to share costs beyond preliminary design. Since federal funds from the Innovative Clean Coal Technology Program will not be provided for detailed design, construction, operation and/or dismantlement until the NEPA process has been successfully completed, offerors at their own risk may choose to begin preparation of this material early so that delay can be avoided. See Section 6.3, "Allowable Project Costs for Cost Sharing Purposes."

### 3.27.4 Post-Award Environmental Monitoring Review:

In addition to the requirements discussed in Section 3.27.3, each Cooperative Agreement entered into will require an Environmental Monitoring Plan (EMP). Guidelines for development of the EMP are provided in Appendix N to the PON. The EMP is intended to ensure that significant technology, project and site-specific environmental data are collected and disseminated in order, among other things, to protect health, safety, and the environment. In addition to data required for compliance with environmental regulations and permits obtained from local, state, and other Federal agencies, additional monitoring may be required to ensure that emissions, ambient levels of pollutants, and environmental impacts do not exceed expectations projected in NEPA documents,

to identify need for corrective actions, and to verify the performance of mitigation measures implemented in conjunction with the project. Environmental data on performance of the technology also will be collected to provide a basis for assessing and mitigating the impacts of future commercialization of the technology. DOE requires the participant to develop its EMP in several stages.

Environmental impacts of operation after completion of the ICCT demonstration phase and, where appropriate, of disposition of the facility, must be considered by DOE to the extent required by its responsibilities under NEPA. Depending on the results of the NEPA process, the EMP may have to consider and analyze whether and to what degree monitoring is required to ensure that the continued safety and limitations of adverse environmental impacts resulting from the ICCT demonstration project predicted in NEPA documentation will be achieved following completion of the project.

The EMP shall be developed in several stages in consultation with DOE. An EMP Outline (EMPO) must be completed and found acceptable by DOE by a date to be fixed in the Cooperative Agreement. A draft of the EMPO must be included in the information delivered pursuant to Section 3.27.3. The Participant is required, by a date to be fixed in the Cooperative Agreement, to develop an EMP in consultation with DOE. Information from the EMPO on Class II monitoring, relating to environmental compliance, and to Class III monitoring, relating to supplemental NEPA issues, will be incorporated by DOE into project-specific NEPA documentation, which is required to be completed prior to DOE cost sharing in the detailed design phase. The EMP must be completed by the Participant and found acceptable by DOE by a date to be fixed in the Cooperative Agreement.

3.28 PROPRIETARY DATA OR CONFIDENTIAL BUSINESS INFORMATION

The proposal submitted in response to this solicitation may contain technical data and other data, including trade secrets and privileged or confidential commercial or financial information, that may be exempt from public disclosure. To help DOE to identify such data, the proposer must specifically identify each page, including each line or paragraph thereof, containing data that the offeror would like withheld from public disclosure to the extent permitted by law, and must mark the cover sheet of the proposal with the following notice:

NOTICE

The data contained on pages \_\_\_\_ of this proposal have been submitted in confidence and contain trade secrets and/or privileged or confidential commercial or financial information, and such data shall be used or disclosed only for evaluation purposes, provided that if a cooperative agreement is awarded to this proposer as a result of or in connection with the submission of this proposal, the Government shall have the right to use or disclose data herein to the extent provided in the cooperative agreement. This restriction does not limit the Government's right to use or disclose data obtained without restriction from any source, including the proposer.

Mark each and every sheet that contains data that you wish to restrict with the following legend:

"Use or disclosure of the proposal data in lines specifically identified by asterisk (\*) are subject to the restriction on the title page of this proposal."

In the event any data contained in a proposal submitted in response to this PON are requested pursuant to the Freedom of Information Act (FOIA), 5 U.S.C. 552, such requests will be reviewed in accordance with the procedures provided in 10 CFR 1004.11 (1984). Prior to disclosure of information, DOE may request additional information from the proposer, including an explanation of why he believes information included in the proposal is exempt from disclosure under the FOIA. Prompt action and cooperation by the proposer will ensure that DOE has all the information necessary to determine whether disclosure is required by the FOIA.

### 3.29 PREPARATION OF OFFERS

- (a) Offerors are expected to examine the entire contents of this PON, including all instructions. The offeror assumes the risk of failure to comply with all the provisions of this PON.
- (b) Each offeror shall furnish the information required by this PON. The offeror shall complete and sign the Federal Assistance Application Form (Appendix G) in accordance with the accompanying instructions. Erasures or other changes must be initialed by the person signing the offer. Offers signed by an agent shall be accompanied by evidence of that agent's authority.

### 3.30 PROPOSAL STRUCTURE

Proposals are expected to conform to the PON provision entitled "Proposal Delivery Information" (Section 3.33), and be prepared in accordance with the instructions provided below. To aid in evaluation, proposals shall be clearly and concisely written, as well as being neat, indexed (cross-indexed

as appropriate), and logically assembled. The proposal shall be typed, double spaced, unreduced in size, on 8.5" by 11" paper. Illustrations should be legible, foldouts shall, in general, be held to 11" by 17" size. All pages of each part shall be appropriately numbered, and each part shall contain the name of the offeror, the date, and the PON number. Each of the volumes shall employ the cover sheets as described below in Section 3.31. Each offer shall be prepared in four volumes:

Volume I:	Qualification Proposal;	See Section 4.1, <i>"Preparation of Volume I"</i>
Volume II:	Technical Proposal;	See Section 4.2, <i>"Preparation of Volume II"</i>
Volume III:	Business and Management Proposal;	See Section 4.3, <i>"Preparation of Volume III"</i>
Volume IV:	Cost Proposal;	See Section 4.4, <i>"Preparation of Volume IV"</i>

P  
R  
O  
P  
O  
S  
A  
L  
  
C  
O  
N  
T  
E  
N  
T  
S  
  
O  
F  
  
T  
H  
E  
  
V  
O  
L  
U  
M  
E  
S

### 3.31 COVER SHEET INSTRUCTIONS

Appendix C of this PON provides four (4) forms that shall be used for the preparation of the cover sheets for the four Volumes identified in above Section 3.30. Proposers are required to complete the forms in accordance with the instructions that follow, and then to photocopy those four (4) forms for use as (or on) the covers for all copies of each of the four Volumes. It is important to note that the forms in Appendix C are different for each of the four Volumes.

Instructions for all four of the forms are provided below:

- (1) Copy Number. Each submittal shall be provided in one (1) original and fourteen (14) copies. In this space, indicate the copy number of the particular Volume, using Number 1 for the original and Numbers 2 through 15 for the fourteen copies.
- (2) Technology. Identify the Innovative Clean Coal Technology(s) employed in your project.
- (3) Title. Provide the full title of the submittal. The title should reflect the substance of the proposed project.
- (4) Name(s). Identify the names(s) of the submitting entity or entities, listing the Participant first (see Section 3.9, "Solicitation Definitions").
- (5) Proprietary Information. Self-explanatory.

### 3.32 PROPOSAL PACKAGING

Each of the proposal volumes shall be physically separate, and entitled as listed below. Fifteen (15) copies are required of each proposal volume (*original*, to be identified as "Copy 1," *plus fourteen (14) copies*, to be identified as "Copies 2 through 15"). The required packaging and grouping are as follows:

- o **Package 1:** Copy 1 of Volume I, Qualification Proposal,  
+ Copy 1 of Volume II, Technical Proposal,  
+ Copy 1 of Volume III, Business and Management Proposal,  
+ Copy 1 of Volume IV, Cost Proposal.
- o **Package 2:** Copies 2 through 15 of Volume I,  
Qualification Proposal.
- o **Package 3:** Copies 2 through 15 of Volume II,  
Technical Proposal.
- o **Package 4:** Copies 2 through 15 of Volume III,  
Business and Management Proposal.
- o **Package 5:** Copies 2 through 15 of Volume IV,  
Cost Proposal.

Note: All documents that contain original signatures are to be included in Package 1.

Each group, designated above, must be packaged individually. This does not preclude assembling more than one, or all, of the groups in a single overall package. Mark the group number on the outside of each package. External markings for each group and place for submission are indicated on the attached labels. In accordance with Section 3.33, "Proposal Delivery Information," the offeror must provide the information required on the labels, including his return address.

### 3.33 PROPOSAL DELIVERY INFORMATION

#### (a) Signed Originals.

Group No. 1 of the proposal, as explained in Section 3.32, "Proposal Packaging," shall contain the signed originals of all documents requiring signature by the offeror. Use of reproductions of signed originals is authorized in all **subsequent** copies of the proposal.

#### (b) Proposal Delivery.

The offeror assumes full responsibility for ensuring that the proposal is received by the date and time specified in Section 3.5, "Time, Date, and Place Proposals are Due." If not sent by the U.S. mail, proposals must be closed and sealed as if for mailing. See also Section 3.36, "Late Applications, Amendments of Applications, and Withdrawals of Applications."

#### (c) Labels.

Labels are enclosed for use when submitting your proposal and amendments thereto. The packages used to submit your proposal (and any amendments thereto) should be marked as shown on the attached labels. The offeror must

complete the blanks on the labels for the PON Number, the closing time and date, and a return address. Note that one label should be used if the proposal is mailed and a different label should be used if the proposal is hand-delivered.

(d) Telegraphic Offers.

Telegraphic offers will not be considered; however, proposals may be modified by written or telegraphic notice, if that notice is received by the time specified for receipt of proposals.

3.34 FUNDS TRANSFER

Payment for amounts invoiced under any award resulting from this solicitation will be made either by Treasury check or by electronic funds transfer. At the time of award, the Government will determine the method of payment in accordance with applicable Department of Treasury requirements. Participants will be required to provide the payee bank account information required to make electronic funds transfers.

3.35 UNNECESSARILY ELABORATE PROPOSALS

Unnecessarily elaborate brochures or other presentations beyond those sufficient to present a complete and effective response to this PON are not desired and may be construed as an indication of the offeror's lack of cost consciousness. Elaborate art work, expensive paper and bindings, and expensive visual and other presentation aids are neither necessary nor desired.

3.36 LATE APPLICATIONS, AMENDMENTS OF APPLICATIONS,  
AND WITHDRAWALS OF APPLICATIONS

- (a) Any proposal received at the office designated in the PON after the exact time specified for receipt will not be considered unless it is received before award is made and it:
  - i. Was sent by registered or certified mail not later than the fifth calendar day before the date specified for receipt of offers (e.g., an offer submitted in response to a solicitation requiring receipt of offers by the 18th of the month must have been mailed by the 13th);
  - ii. Was sent by mail and it is determined by the Government that the late receipt was due solely to mishandling by the Government after receipt at the Government installation; or
  - iii. Is the only proposal received.
- (b) Any modification of a proposal or quotation, except a modification resulting from a request for "best and final" offer, is subject to the same conditions as in subparagraphs (a)(i) and (ii) above.
- (c) A modification resulting from a request for "best and final" offer received after the time and date specified in the request will not be considered unless received before award and the late receipt is due solely to mishandling by the Government after receipt at the Government installation.
- (d) The only acceptable evidence to establish the date of mailing of a late proposal or modification sent either by registered or certified mail is the U.S. or Canadian Postal Service postmark on the wrapper or on the

original receipt from the U.S. or Canadian Postal Service. If neither postmark shows a legible date, the proposal, quotation, or modification shall be processed as if mailed late. "Postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed by employees of the U.S. or Canadian Postal Service on the date of mailing. Therefore, offerors or quoters should request the postal clerks to place a hand cancellation bull's-eye postmark on both the receipt and the envelope or wrapper.

- (e) The only acceptable evidence to establish the time of receipt at the Government installation is the time/date stamp of that installation on the proposal wrapper or other documentary evidence of receipt maintained by the installation.
- (f) Notwithstanding paragraph (a) above, a late modification of an otherwise successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.
- (g) Proposals may be withdrawn by written notice or telegram (including mailgram) received at any time before award. Proposals may be withdrawn in person by an offeror or an authorized representative, if the representative's identity is made known and the representative signs a receipt for the proposal before award.

### 3.37 EXPLANATION TO PROSPECTIVE OFFERORS

A prospective offeror who would like an explanation or interpretation of this PON must submit a written request for such explanation or interpretation to the Procurement Board Member in time to allow the reply to reach all prospective offerors before the submission of their offers. In order to ensure that requests for explanation or interpretation will be considered, the requests actually must be received by the Procurement Board Member by 3:30 p.m., Washington, D.C., time, on May 6, 1988. Oral explanations or instructions provided before the award of the Cooperative Agreement are not binding. Any information given to a prospective offeror concerning this PON will be furnished promptly to all other prospective offerors as an amendment of the PON, if that information is necessary in submitting offers or if the lack of it would be prejudicial to any other prospective offerors.

### 3.38 FAILURE TO SUBMIT PROPOSAL

Recipients of this PON who choose not to submit a proposal should not return this PON. However, they should indicate by letter or postcard to the Procurement Board Member whether they want to receive future solicitations for similar requirements. If a recipient does not submit an offer and does not so notify that future solicitations are desired, the recipient's name may be removed from the applicable mailing list. Accordingly, it is essential that recipients complete and return the "Intention to Propose" form provided as Appendix B of this PON.

3.39 AWARD OF FINANCIAL ASSISTANCE

- (a) The Government intends to provide financial assistance through cost shared Cooperative Agreements resulting from this PON to those responsible offerors who submit proposals which conform to this PON and are determined to be most advantageous to the Government following consideration of the evaluation criteria and program policy factors as specified in this PON.
- (b) The Government may (1) reject any or all offers, (2) accept for support any proposal, in whole or in part, and (3) waive informalities and minor irregularities in offers received.
- (c) The Government may award financial assistance on the basis of initial offers received, without discussions. Therefore, each initial offer should contain the offeror's best possible terms from technical, cost, and business and management standpoints.
- (d) A written award or acceptance of offer mailed or otherwise furnished to the successful offeror within the time for acceptance specified in the offer shall result in a binding agreement without further action by either party. Before the offeror's specified expiration time (see Section 3.7, "Offer Acceptance Period"), the Government may accept an offer whether or not there are discussions after its receipt, unless a written notice of withdrawal is received before award.

### 3.40 RIGHTS IN TECHNICAL DATA

The section of this PON that describes the work to be performed also sets forth DOE's known requirements for technical data. The Additional Technical Data Requirements clause (see Appendix M, "Model Cooperative Agreement") provides the Government with the option to order additional technical data, the requirements for which are not known at the time of Agreement. There is, however, a built-in limitation on the kind of technical data that may be required. This limitation clause provides that the offeror may withhold delivery of proprietary data. This withholding of proprietary data is the primary means by which the offeror may protect his proprietary position. There are, however, two situations where the Government may need to have limited access to a participant's proprietary data. First, paragraph (f) of the Rights in Technical Data clause (see Appendix M, "Model Cooperative Agreement") gives the Contracting Officer's representatives the limited right to inspect, at the participant's facility, the participant's proprietary data which were withheld from delivery, for the purpose of verifying that such data were properly withheld or to evaluate work performance. The second situation is provided in paragraph (g) of the Rights in Technical Data clause. Paragraph (g) provides the Government the right to require the participant to furnish with limited rights proprietary data previously withheld. In this situation, the limited rights in proprietary data and the Government's obligation for limited use and disclosure of such data provide the means by which the participant protects his proprietary position. Paragraph (g) will be used where it is determined that for programmatic reasons there is a need for the delivery of proprietary data to the Government. To assist in making this programmatic determination, it is necessary that your proposal state that

the work to be performed and the known requirements for technical data as set forth in this PON have been reviewed, and, as discussed in Section 4.2.5, either state that, to the best of your knowledge, no data will be withheld, or submit a list identifying the proprietary data that, to the best of your knowledge, will likely be used, acquired, or otherwise obtained in the course of project performance and will be withheld.

Paragraph (c)(3), regarding licensing of copyrighted material, paragraph (h), Participant Licensing, and paragraph (j), Commercialization of Technology, shall not normally be included where the participant is a small business firm or nonprofit organization. For participants other than small business firms or nonprofit organizations, paragraph (h), modified as necessary by programmatic needs, will be included, and paragraphs (j) and (c)(3) may be included, as determined by programmatic needs to ensure commercialization of the technology to be demonstrated. Paragraph (i), Availability of Contract and Other Data, will normally be included to provide the Government with rights in data in the event of participant or Government withdrawal. However, paragraph (i) may be modified as necessary in accordance with programmatic needs for a particular project. Similarly, paragraph (n) of the "Patent Rights" clause ("Facility Patent License") may be modified as necessary in accordance with programmatic needs.

### 3.41 REPORTS TO CONGRESS

DOE will prepare and submit to Congress the following two reports associated with the proposals received and selections made as a result of this PON:

- (1) After projects are selected, a comprehensive report on the proposals received, and
- (2) A full and comprehensive report on each project selected, including the facts and circumstances relied upon in support of the proposed project, which will be submitted to Congress at least 30 calendar days prior to the planned execution of any Cooperative Agreement to be entered into as a result of this PON. This report will include an analysis, separate from the NEPA process, describing the maximum potential change in principal air emissions, water effluents, and solid wastes that might be produced regionally and nationally within the U.S. in the year 2010, based on projected commercial applications of the generic technology representing the offeror's technology.

#### 4. PROPOSAL PREPARATION INSTRUCTIONS

**NOTE:** To facilitate evaluation, proposers are to organize their proposals to correspond precisely to the proposal preparation instructions in Sections 4.1, 4.2, 4.3, and 4.4, which correspond to the evaluation criteria in Sections 5.2, 5.4.1, 5.4.2, and 5.4.3 of this PON.

##### 4.1 PREPARATION OF VOLUME I: QUALIFICATION PROPOSAL

The preparation of this volume is extremely important. If the proposal does not meet the requirements identified in Section 5.2, "Qualification," the proposal shall not undergo preliminary and comprehensive evaluation. The offeror must address each of the Qualification Criteria listed in Section 5.2 of this PON and clearly show how the proposal meets the qualifications. The discussion should be sufficient unto itself for a determination as to whether or not the proposal meets the Qualification Criteria. DOE has no obligation to refer to other volumes if the discussion provided in Volume I does not show that the Qualification Criteria have been clearly and unambiguously met. For those criteria that require the completion of the certification forms provided in Appendix D of this PON, these forms must be submitted in this Volume. Such certifications must be completed and signed by an individual with authority to legally bind the offering organization. The information required to satisfy the Qualification Criteria is indicated below:

##### (a) LOCATION OF DEMONSTRATION

The proposed demonstration project or facility (existing or new) must be located in the United States.

The offeror must clearly show that the location proposed is within the United States, and must clearly identify the proposed location.

Information provided must indicate the state, county, and municipality (if applicable) in which the project(s) or facility(ies) will be located.

"United States" or "United States of America" means the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, and any possession, or trust territory of the United States.

(b) USE OF UNITED STATES COAL(S)

The proposed demonstration project must be designed for and operated with coal(s). The coal(s) must be from U.S. mines.

The offeror must provide a description of the type(s) and source(s) of coal(s) sufficient to verify that the coal(s) to be utilized will be mined in the United States.

(c) COST SHARING

The offeror must agree to provide a cost share of at least fifty (50) percent of the total project cost, with at least fifty (50) percent in each of the three project Phases (see Section 4.2.5, "Discussion of Demonstration Project Factors").

The proposer must complete the Certification Form contained in Appendix D of the PON and include it in Volume I of the proposal to confirm that the Government's cost share will not exceed 50 percent of the total project cost and will not exceed 50 percent for each of the three Phases.

(d) SITE AVAILABILITY

The proposer must have access to, and use of, the proposed site(s) and any proposed alternate site(s) for the duration of the project.

The proposer must document this access by providing evidence of the proposer's ownership of the site(s), option(s) to purchase the site(s), lease(s) for the site(s), or letter(s) signed by the owner(s) of the site(s) which provide(s) firm evidence of the commitment of the owner(s) to assure availability of the site(s).

(e) PROJECT TEAM AGREEMENTS

The proposed project team must be identified and firmly committed to fulfilling its proposed role in the project.

The project team comprises those organizations or parties responsible for proposing and accomplishing all phases of the demonstration project. The project team includes the legal entity responsible for the project (i.e., the prospective **participant**), the subcontractors, technology licensors, and host-site offerors that are identified in the proposal. Where a legal entity has been or will be created to conduct the project, the participating organizations or parties (partners, joint venture members, etc.) are also considered as project team members.

To document the project team agreement(s), each member of the team shall provide to the offeror a legally binding agreement, or letter of intent to reach such agreement, with the prospective participant that clearly and explicitly states its respective role in the project and the nature of its relevant business relationship for purposes of this project.

These documents must be signed by a corporate official or other appropriate person authorized to legally bind the aforementioned entities. These letters shall be included in Volume I of the proposal.

(f) REPAYMENT

The offeror agrees that, if selected, it will submit a Projected Repayment Schedule consistent with Section 6.4 of this PON.

The proposer must complete the Certification Form contained in Appendix D of the PON and include it in Volume I of his proposal. The Certification will serve to affirm that a "Projected Repayment Schedule" will be submitted prior to award. (See PON Section 6.4, "Recovery of Government's Investment.")

## 4.2 PREPARATION OF VOLUME II: TECHNICAL PROPOSAL

The text below identifies the information needed by DOE to evaluate the proposal according to the criteria contained in PON Section 5.4.1, "Technical Evaluation Criteria."

The Technical Evaluation Criteria are divided into two major categories. The first, "**Commercialization Factors**," addresses the projected widespread commercial application(s) of the technology to the presently existing U.S. population of coal-fired facilities in the 1990's and beyond, rather than the individual demonstration project itself.

The second major category, "**Demonstration Project Factors**," recognizes the fact that the specific proposed demonstration project represents the critical step between "pre-demonstration" scale of operation and commercial application, and deals with the proposed project itself.

### 4.2.1 Organization of Volume II: Technical Proposal:

The Technical Proposal (Volume II) should be organized as follows:

#### Section II.1 : INTRODUCTION

#### II.2 : COMMERCIALIZATION FACTORS

##### II.2.1 : Process Description

##### II.2.2 : Technology Development Status

##### II.2.3 : Technology Applicability and Limitations

##### II.2.4 : Retrofit and Equipment Utilization Factors

##### II.2.5 : Cost and Performance Information

##### II.2.6 : Environmental, Health, Safety, and Socioeconomic (EHSS) Aspects

#### II.3 : DEMONSTRATION PROJECT FACTORS

##### II.3.1 : Introduction to the Demonstration Project

##### II.3.2 : Technical Readiness

##### II.3.3 : Adequacy, Appropriateness, and Relevance of the Demonstration

##### II.3.4 : EHSS and Other Site Related Aspects

##### II.3.5 : Technical and Management Approach

#### 4.2.2 Discussion of Commercialization Factors:

The Proposer must supply the cost, performance, and environmental information specified below so that DOE can assess the potential of the proposed technology (or combination of technologies) to provide cost-effective reductions in emissions of  $\text{SO}_2$  and/or  $\text{NO}_x$  when applied commercially to existing coal-fired facilities. This information will be used to evaluate the two Commercialization Factors, specified in PON Section 5.4.1.1. Since both cost and performance (e.g., percent  $\text{SO}_2$  removed) information to be supplied by the proposer will be used by DOE in the evaluation of both criteria, the proposal discussion should be organized as specified in Section 4.2.1 above, rather than as separate discussions corresponding to each of the criteria.

#### 4.2.3 Discussion of the DOE Cost and Environmental Performance Methodology:

DOE will perform an analysis of the cost-effectiveness and potential emission reductions that could be achieved by the commercial version of the proposed technology. The methodology developed to perform this analysis will allow DOE to estimate the extent to which the the proposed technology, when compared to currently available commercial technology options, is likely to improve the cost effectiveness of controlling  $\text{SO}_2$  and  $\text{NO}_x$  emissions when applied to existing coal fired facilities. The methodology also will allow DOE to estimate the potential total reduction of  $\text{SO}_2$  and  $\text{NO}_x$  emissions as well as the potential reduction in transboundary and interstate air pollution that could be achieved where the proposed technology is lower in cost than currently available commercial technologies.

Existing utility and industrial coal-fired boilers account for about 95% of emissions from all existing coal-fired facilities. A variety of industrial processes account for most of the remaining 5% of emissions from existing coal-fired facilities. The methodology that DOE will use involves cost and performance comparisons of the proposed technology to currently available commercial technology options. This comparison will be done on the basis of information contained in data bases for a large number of existing U.S. coal-fired facilities. The data bases for existing utilities and industrial coal-fired boilers are extensive. For example, the data base for utility boilers contains information characterizing nearly 1100 boilers. The available data for the industrial processes or other sources accounting for the remaining 5% of the emissions from coal-fired facilities is limited. To facilitate application of the methodology to this sector, (i.e., to sources other than utility and industrial boilers), DOE is requesting information from the proposer to supplement the data currently available to DOE. The information requested includes the total annual emissions of  $\text{SO}_2$  and  $\text{NO}_x$  from these coal-fired facilities (on a regional basis if available), characteristics of these sources (including type, size, coal sulfur contents, and facility ages), and currently available commercial technology options for controlling emissions from these sources and their cost-effectiveness. This information should be included in proposal Section II.2.3, "Technology Applicability and Limitations."

The methodology requires estimated cost and performance information from the proposer for application of a mature version of the proposed retrofit or repowering technology to a "reference" plant. One such reference that should be applicable to many proposed technologies is the hypothetical 500 MWe coal-fired electric utility plant which is described in detail in Appendix I.

This reference plant is near the median, on an emissions basis, of the population of existing unscrubbed coal-fired utility boilers. Also, an alternate hypothetical 250 MWe coal-fired utility plant is given in Appendix I for those technologies which are more likely to be applied to smaller utility boilers. In addition, for a coal processing technology such as coal cleaning, an additional reference plant is required. Specifications for this plant are provided in Appendix I of the PON, in the form of a 750 ton/hour new coal processing facility.

DOE believes that the reference plants described above should be appropriate for many of the proposed technologies. However, DOE recognizes that these reference plants may not be appropriate for certain proposed technologies (e.g., technologies that are applicable only to coal-fired industrial processes, or to a specialized segment of the existing utility population such as small cyclone boilers). The proposer may, in these cases or for any other reason, choose to provide a different reference plant(s). Any such alternative reference plant(s) or facility provided by the offeror should be described and characterized in the same manner as the reference plants provided by DOE in Appendix I of this PON.

For the reference plant, the proposer must supply detailed information for one "base case" and summary information for four other "sensitivity" cases covering a wide range of coal sulfur contents and plant sizes. The information for the sensitivity cases is very important in the estimation of the cost effectiveness and performance of the proposed technology; it will be the basis for interpolating or extrapolating the limited data supplied in the proposal and applying that data to actual plant sizes and coal sulfur contents in the existing U.S. boiler population. It is important to note that the

information provided by the entire set of five cases will be used in estimating the cost and performance of the proposed technology for any actual boiler; thus, the choice of coal sulfur content and size for the reference plant does not significantly influence the results for a proposed technology.

The results of DOE's application of the methodology will be the basis for the scoring by DOE of the Commercialization Factors specified in PON Section 5.4.1.1. In addition, the environmental information requested in proposal section II.2.6 will be used to assess the environmental, health, safety, and socioeconomic impacts of the proposed technology.

The Commercialization Factors are of considerable importance, as described in PON Section 5.4.1.3, "Relative Importance of Technical Evaluation Criteria."

Accordingly, the proposer should provide the best information and data available in order to permit a complete and accurate evaluation by DOE of the potential of the proposed technology. The data required in Tables 2 and 3 of Proposal Section II.2.5 will provide information needed from the proposer for DOE to apply the methodology. DOE will review the data supplied in these Tables and, where appropriate, may adjust these figures. The narrative discussion provided by the offeror in proposal section II.2 and the information requested in Appendix I should facilitate a full understanding of the proposed technology by DOE. Since the narrative discussion and the documentation resulting from Appendix I will play a critical role in DOE's review of the data supplied in Tables 2 and 3, it is important that the offeror provide a complete and accurate description of the information requested.

The proposer must supply the information described below in Section 4.2.4 for the technology being proposed. This information should be organized as specified in PON Section 4.2.1, "Organization of Volume II: Technical Proposal."

DOE distinguishes between clean coal technologies that are applied at the boiler site and those that require a processing facility that may be located remote from the boiler site (e.g., coal cleaning, coal liquefaction, and some coal gasification approaches) where a coal-based fuel is produced that is burned at the boiler site. Instructions for the preparation of proposals for both types of technologies are set forth below, first for clean coal technologies that are applied at the boiler site, followed by off-site technologies. Proposers should provide information appropriate to the type of technology they are proposing. If an offeror is proposing a technology that involves a facility remote from the boiler site, information must be supplied for both the coal processing facility and for the boiler facility.

#### 4.2.4 Contents of the Technical Proposal:

The following discussion corresponds to the Technical Proposal organization as specified in the PON Section 4.2.1:

##### **Proposal Section II.1, "Introduction"**

The proposer shall provide an introduction to the demonstration project, the technology being proposed, and a general description of how it will be employed commercially in the 1990s and beyond. This introduction should also include background information describing the development history of the

proposed technology. Any other information of a general or introductory nature which may assist in understanding the project, the technology and the projected commercial application should be provided in this section.

#### **Proposal Section II.2.1, "Process Description"**

The proposer shall provide a general description of the process(es) proposed and how it (they) will be used alone or in combination with other commercially available technology options to reduce SO<sub>2</sub> and NO<sub>x</sub> from existing coal-fired sources. This discussion should clearly address the following aspects:

- o The process concept and how it operates (include a flowsheet).
- o Inherent advantages of the process relative to currently available commercial technologies.
- o The important process chemistry, including reagent consumptions and stoichiometries, and process performance (e.g., percent SO<sub>2</sub> removal) as a function of reagent consumption.
- o How the process will be combined with other technologies (if applicable) to provide a cost-effective approach to emission(s) reduction (e.g., coal cleaning plus post-combustion clean-up).
- o The cost and environmental performance expected by the proposer at the design operating conditions for the process.
- o Raw materials required by the process and expected sources and projected availability.
- o By-products generated (if any), their markets, and expected prices.
- o Other information the proposer feels is necessary to provide a clear understanding of the processes involved in the commercial embodiment of the technology.

#### **Proposal Section II.2.2, "Technology Development Status"**

In this section of the technical proposal, the offeror shall provide information on the technology development status which presents a clear picture of, and prior operational experience and success (or lack thereof) with, major and key process steps and components known to the proposer, regardless of whether the experience was that of the proposer or of some other party. This discussion should describe the maturity of the technology, the largest scale

of operation for these steps or process components, and the prior experience with integration of process steps and components. The discussion should specify the coals, sulfur contents, process conditions, etc. to which this operational experience applies.

### **Proposal Section II.2.3, "Technology Applicability and Limitations"**

#### **For Technologies Applied at the Boiler Site:**

In this section of the technical proposal, the proposer shall describe the applicability of his proposed technology to the existing population of coal-fired boilers. The proposer shall define those technical, geographic, and other factors that characterize the applicability of the proposed technology to a wide variety of boiler types and sizes. For example, the proposed technology may be applicable to wall-fired and tangentially-fired boilers, but not to cyclone boilers. Or, it may require a raw material such as natural gas to be available at the plant.

The proposer shall document the applicability of the proposed technology to existing coal-fired facilities by addressing the factors described below in Table 1.

Table 1

**Factors Affecting Applicability of Clean Coal Technologies**

- o Coal type and characteristics (e.g., western, eastern, rank, total and pyritic sulfur contents, etc.)
- o Boiler size (e.g., no boilers over 300 MWe, less than 50 MWe, etc.)
- o Boiler age (e.g., not practical for boilers older than 30 years)
- o Boiler heat-release limitations (e.g., Btu/ft<sup>2</sup> of plan area)
- o Capacity factor limitations
- o Load profile applicability (base-loaded, intermediate, cycling, peaking)
- o Boiler firing type (pulverized coal, cyclone, stoker, etc.)
- o Boiler firing configuration (e.g., tangential, wall-fired front, wall-fired opposed, turbo, etc.)
- o Boiler bottom type (wet or dry)
- o Geographical applicability (e.g., western, eastern, arid or non-arid regions, etc.)
- o Furnace dimensional requirements (e.g., furnace must be over 20 ft. wide to avoid flame impingement)
- o Reheat or non-reheat steam conditions
- o Steam turbine characteristics (e.g., throttle conditions and steam flow rates, unit electric generating capacity, etc.)
- o Particulate collector requirements (e.g., only units with fabric filters, only ESP-equipped units, independent of existing device, etc.)
- o Raw material requirements (e.g., need for natural gas, limestone, etc.)
- o Byproduct market limitations
- o Waste disposal factors
- o Other pertinent factors describing process applicability and limitations

**For Technologies Applied Remote from the Boiler Site:**

In this section of the proposal, the proposer shall describe the extent to which the technology may penetrate existing markets for coal or coal-based fuels. The proposer must describe restrictions on the range of coals that can serve as feed to the process and restrictions on the use of the product fuel from the process within the current population of coal-fired boilers. The proposer shall describe any technical, geographic and other factors that would enable the product fuel to be utilized by the population of existing coal-fired facilities. The proposer shall document the applicability of the proposed technology to existing coal-fired facilities by addressing the factors described above in Table 1.

**Proposal Section II.2.4, "Retrofit and Equipment Utilization Factors"**

The offeror shall discuss the manner in which the proposed technology would be integrated into an existing coal-fired facility. The discussion should indicate the degree of difficulty expected to be encountered in retrofitting or repowering the proposed technology into the reference plant, and the cost increase expected for installing the technology into the reference plant, by plant sections, relative to the cost of installing the technology in a new plant (i.e., "greenfield" costs). The discussion should provide support for the retrofit and equipment utilization factors selected by the offeror (See Appendix I).

The discussion in this section also must describe the manner and extent to which the proposed technology will affect the ability of the plant to operate (e.g., downtime during construction, partial production during startup/shake-down, reduced or increased production when in full operation, etc.).

Characteristics of the proposed technology which could affect its cost or ability to be integrated into the reference plant also must be discussed (e.g., large space requirements between boiler and flue, on-site fabrication of large pressure vessels, barge access to the site for large components, capability for siting the new technology at some distance from the existing plant site, etc.). The proposer also must discuss how these characteristics could cause significant changes in retrofit or equipment utilization factors when the technology is used at sites other than the reference plant and, if necessary, develop additional retrofit or equipment utilization factors that can best describe these variations.

#### **Proposal Section II.2.5, "Cost and Performance Information"**

##### **For Technologies Applied at the Boiler Site:**

In this section of the proposal, the offeror **must complete Table 2, "Cost and Performance Data for Technology Applied at the Boiler Site," for the proposed technology.** It is anticipated that Table 2 will normally be developed from, and supported by, the worksheets of Appendix I. To facilitate DOE's evaluation of the data in Table 2, the proposer must supply the information defined in Appendix I. It is anticipated that the proposer will use the worksheets in Appendix I to provide this information and include them in this

**section of the proposal.** The proposer may, however, develop and support the data in Table 2 using an approach other than the Appendix I worksheets (e.g., a published conceptual design study using the proposed technology). In this case, the alternative approach must be detailed and fully support Table 2.

The proposer will use the matrix provided in Table 2 to provide information on the cost and performance of the proposed technology at various plant sizes and with coals of varying sulfur content. The matrix contains nine (9) cells; however, ONLY FIVE (5) CELLS MUST BE COMPLETED. These cells are identified in the Table. Within each "block" or "cell" of the matrix, eight (8) items of information are required. The block in the center of the Table should contain the information for the "base case." The remaining four cells should contain information for the "sensitivity cases." All eight items of information must be provided for all five cells. The "Information Items" in Table 2 and their units of measurement are appropriate for an electric generating facility. If the proposer has another type of coal-fired facility (e.g., industrial boiler), units of measurement should be used for each parameter that are appropriate to that type of facility; however, it is important that the units used be clearly identified and explained.

DOE believes that the reference plant and sensitivity cases provided in Appendix I should be appropriate for many of the proposed technologies. To permit calculation of the cost and performance for other plant sizes and coal sulfur contents, plants of 100 MWe and 800 MWe scale and one percent and four percent coal sulfur content were chosen for the sensitivity cases. For the alternate 250 MWe reference utility plant, the corresponding sensitivity case plant sizes are 100 MWe and 500 MWe. However, the proposer may provide an alternative reference plant and/or sensitivity cases. In this instance, the

offeror must provide the information requested in Appendix I. Appendix I contains the unit cost data and other assumptions and conventions to be followed in providing the plant cost and performance data required.

In preparing Table 2 for inclusion in the proposal, the offeror should clearly indicate the sulfur content of the three coals used and power output before modification if values other than those shown in Table 2 are chosen. The four "sensitivity" cases should bracket the base case cell values and cover the range of sizes and coal sulfur contents where the proposed technology is applicable.

**For Technologies Applied Remote from the Boiler Site:**

In this section of the proposal, the offeror must provide the data required in Table 3, "Cost and Performance Data for Coal Processing Technology Applied Remote From the Boiler Site."

When the remotely located coal processing technology is being used alone (i.e., not in conjunction with an on-site cleanup technology), *Information Items 1 through 8 from Table 2* should be added to the eight Information Items in Table 3, and reported in the appropriate cells of Table 3 (i.e., *sixteen Information Items in each cell*.) In this instance, all cells will address use of the product fuel in the "base case"-size power plant (e.g., 500 MWe). Thus, these data will show the effects of fuel sulfur content and pyrite fractions on the power plant cost of electricity.

TABLE 2  
Cost and Performance Data for Technology Applied at the Boiler Site  
Utility Power Plant\*\*

	100 MWe Before Modification	500 MWe Before Modification	800 MWe Before Modification
1% Coal Sulfur Content	Information Items 1 through 8 below*  <b>INFORMATION CELL</b>		Information Items 1 through 8 below*  <b>INFORMATION CELL</b>
2.5% Coal Sulfur Content		Information Items 1 through 8 below*  <b>INFORMATION CELL</b>  BASE CASE (See Text)	
4% Coal Sulfur Content	Information Items 1 through 8 below*  <b>INFORMATION CELL</b>		Information Items 1 through 8 below*  <b>INFORMATION CELL</b>

\* The required Information Items for the modified power plant are as follows:

1. Capital cost, in \$/kWe
2. Fixed annual operating and maintenance costs (O&M), in mills/kWe-hr
3. Variable operating costs, in mills/kWe-hr
4. SO<sub>2</sub> emitted in lb/Million Btu
5. NO<sub>2</sub> emitted in lb/Million Btu
6. Power output of modified plant, in MWe
7. Coal-based fuel feed rate, in tons/hr
8. Supplemental fuel - specify fuel type, amount, heat content.

\*\* If the 250 MWe alternate utility reference plant is used, the three columns become: 100 MWe, 250 MWe, and 500 MWe, respectively.

It is anticipated that Table 3 will normally be developed from, and supported by, the worksheets in Appendix I. To facilitate DOE's evaluation of the data in Table 3, the proposer must supply the information required in Appendix I. It is anticipated that the proposer will use the worksheets in Appendix I to provide this information, and include them in this section of the proposal. The proposer may, however, develop and support the data in Table 3 using an approach other than the Appendix I worksheets (e.g., a published conceptual design study using the proposed technology). In this case, the alternative approach must be detailed and fully support Table 3.

The proposer will use the matrix provided in Table 3 to characterize the cost and performance of the proposed technology at various total sulfur contents and pyritic sulfur fractions. The matrix contains nine (9) cells; however, **ONLY FIVE (5) CELLS MUST BE COMPLETED**; these cells are identified in the Table. Within each "block" or "cell" of the matrix, eight (8) items of information are requested. All eight items of information must be provided for all five cells.

For Table 3, the variables in the rows and columns of the matrix are total sulfur content (as-received basis) and pyritic sulfur fraction, respectively. The purpose of the matrix in Table 3 is to gain information on the proposed technology over a range of coal types that includes most steam coals of commercial importance.

The cost and performance data requested in the eight Information Items for each cell in Table 3 are to be based on a new coal processing facility of 750 ton coal/hour feed capacity. The capacity of the facility is constant for all cells in the matrix. The reference coal to be used contains 2.5% sulfur (as

TABLE 3

**Cost and Performance Data for Coal Processing Technology Applied Remote From the Boiler Site**

**Pyritic Sulfur Fraction**

	Pyritic Sulfur Fraction = 0.4	Pyritic Sulfur Fraction = 0.6	Pyritic Sulfur Fraction = 0.8
1% Coal Sulfur Content		Information Items 1 through 8 below*  <b>INFORMATION CELL</b>	
2.5% Coal Sulfur Content		Information Items 1 through 8 below*  <b>INFORMATION CELL</b>  BASE CASE (See Text)	Information Items 1 through 8 below*  <b>INFORMATION CELL</b>
4% Coal Sulfur Content	Information Items 1 through 8 below*  <b>INFORMATION CELL</b>		Information Items 1 through 8 below*  <b>INFORMATION CELL</b>

\* The required Information Items for the coal processing facility are as follows:

1. Capital cost, \$
2. Annual fixed operating and maintenance costs, \$
3. Variable operating costs, \$/hour
4. Product fuel higher heating value, Btu/lb
5. Product fuel total sulfur content, lb/million Btu
6. % yield, (ton/ton feed, dry basis)
7. % Btu recovery (HHV basis)
8. % Ash in the product fuel (dry basis)

received) of which 60% is pyritic. The sensitivity cases cover 1, 2.5 and 4% total sulfur and 0.4, 0.6 and 0.8 pyritic sulfur fraction. Information on the reference coal, including simulated washability data, and information on the site location for the coal processing facility are found in Appendix I.

If the reference coal is not applicable or appropriate to the proposed technology, the proposer may specify other coals and may specify other sensitivity cases. The proposer should then explain why the substitution of coals is necessary and must characterize the substitute coal completely. The alternate values should be shown in the matrix.

**Proposal Section II.2.6, "Environmental, Health, Safety,  
and Socioeconomic Aspects"**

Material in this section addresses the criterion in Section 5.4.1.1(a). The proposer should provide information and analysis about emissions of pollutants other than  $\text{SO}_2$  and  $\text{NO}_x$ , about the potential EHSS impacts of the technology, and about the tradeoffs among  $\text{SO}_2$ ,  $\text{NO}_x$ , and other potential EHSS impacts.

**EHSS Impacts**

Discuss the EHSS impacts of the technology in its commercial scale implementation. Effluents and impacts generally should be described in terms of unit quantities per ton of feed coal and/or total quantities for a typical plant, as appropriate. Preferably, this typical plant should be the reference (or Offeror's alternative) plant used for providing inputs to the Cost and Environmental Performance Methodology, as described above for Section II.2.5

of the proposal and in Appendix I of the PON. Specifically, the following aspects must be addressed:

(1) Identify changes in the types and quantities of regulated and unregulated pollutants that may be released as a result of applying the proposed technology. The quantitative description of pollutant releases should include, as a minimum, the following measures of air emissions, water effluents, and solid wastes for the reference plant for which information is provided in Table 2 and (if applicable) in Table 3:

- o nonhazardous waste expected to be generated (lb/million Btu of feed coal)
- o hazardous waste expected to be generated (lb/million Btu of feed coal)
- o ash expected to be generated (lb/million Btu of feed coal)
- o total particulates expected to be emitted (lb/million Btu of feed coal)
- o sulfur compounds other than  $\text{SO}_2$  (e.g.,  $\text{SO}_3$ ,  $\text{H}_2\text{S}$ ) expected to be emitted (lb sulfur/million Btu of feed coal)
- o total suspended solids in wastewater (lb/million Btu of feed coal)
- o sulfur byproducts (sludge, sulfur, etc.) (lb/million Btu of feed coal)
- o water consumption (gallons/million Btu of feed coal)

(This information is required by DOE in order to perform the analysis of the environmental performance aspects of the **commercial** version of the proposed technology.)

(2) Describe the composition and character of solid wastes generated by the technology and associated facilities, especially solid waste streams that differ from those generated by current commercial technologies. Identify requirements for further treatment and disposal and describe proposed treatment and disposal methods. Describe tests made for toxicity and RCRA

classification. Identify potential for beneficial utilization of wastes and describe status of efforts to develop, test, and commercialize these uses. Describe expected EHSS impacts of disposal or utilization of wastes from the technology and compare with those of wastes from coal-using facilities using current technologies.

(3) Discuss direct and indirect environmental impacts, long term and/ or cumulative effects, and irreversible and irretrievable commitments of resources (e.g., land, water, and nonrenewable resources).

(4) Compare the EHSS impacts of the proposed technology (excluding SO<sub>2</sub> and NO<sub>x</sub> impacts) with alternative technology options that are commercially available for the principal applications expected for this technology. Show the incremental improvements that can be achieved and any shortcomings. For applications of retrofit to or repowering of existing facilities, also describe the changes in such impacts from those of the existing facilities without additional control technologies.

Although DOE will analyze the potential for aggregate reductions of SO<sub>2</sub> and/or NO<sub>x</sub> emissions and their transboundary transport, the proposer may wish to provide additional evidence, analysis, and discussion about potential reductions during the time frame from 1995 to 2010 or beyond. Special markets and applications for the technology and reasons for its particular suitability in certain situations should be explained.

## Control Flexibility and SO<sub>2</sub> and NO<sub>x</sub> Emission Tradeoffs

If the technology is claimed to be capable of exceeding the percentage reductions of SO<sub>2</sub> and/or NO<sub>x</sub> specified in the Tables 2 and 3 above and in the worksheets in Appendix I for other types of applications or operating conditions, then describe those applications and the performance. Discuss the range of process design variations, inherent advantages of the proposed technology, and control technology options available to improve environmental performance in a cost-effective manner. If appropriate, discuss how the percentage reductions of SO<sub>2</sub> and/or NO<sub>x</sub> that will be achieved by the commercialized technology may vary with the commercial application, including coal type and composition, type of facility, equipment design, operating conditions, and other relevant factors. Also indicate how operating costs and energy penalties may vary with operating conditions.

#### 4.2.5 Discussion of Demonstration Project Factors:

This part of the proposal (Volume II) shall contain narrative discussion, flow sheets, supporting data, and analyses referring to the specific demonstration being proposed, rather than to the commercial embodiment of the technology under development. This discussion should also be organized as described in PON Section 4.2.1, "Organization of Volume II: Technical Proposal." The content of these portions of the proposal are specified below:

##### **Proposal Section II.3.1, "Introduction to the Demonstration Project"**

The proposer shall provide a general introduction to the demonstration project being proposed and how it will provide the information that will subsequently be needed for commercialization. Provide background information in this section if it will help to provide a clear picture of the demonstration project. Provide general descriptions to show how the proposed demonstration will be constructed and operated. Any other information of a general or introductory nature which will assist the DOE evaluators to understand the project should be provided in this section.

##### **Proposal Section II.3.2, "Technical Readiness"**

The proposal must discuss and provide evidence of the readiness of the technology for demonstration at the size proposed. The proposer must document work accomplished to date, including a discussion of the data collected in the earlier development of the technology. The size of process work completed to date, including throughput, conditions of operation, and duration of testing must also be provided. The key process transitions (where applicable) from bench to pilot scale and from batch to continuous operation must be discussed and data and results from these operations are to be

provided to demonstrate that a sufficient basis exists for scaleup. A further discussion must be provided to indicate the degree of scaleup required to bring the technology from its current state of development to the demonstration scale proposed. The rationale for choosing the scale of the demonstration project must also be provided. In these scaleup discussions, it is essential that the proposer identify all significant items of equipment and processes that have not operated at the proposed scale and/or conditions of operation to be encountered in the course of the demonstration project. Discuss key process integration issues, risks and uncertainties, and any relevant tests conducted to date.

The technical risks that could affect the success of the demonstration project must be identified and discussed. The discussion must address any measures proposed to mitigate or overcome these risks. The offeror should also provide any other relevant discussion or information that serves to demonstrate that the adequacy, availability, suitability, and quality of the data base and analysis support the decision to advance the technology to the demonstration scale proposed.

**Proposal Section II.3.3, "Adequacy, Appropriateness, and Relevance of the Demonstration"**

The project must demonstrate all the facets of the proposed technology that are key to commercial implementation, e.g., process integration, vessel scale, etc. However, the demonstration project need not be a complete, full-scale prototype commercial plant, but may, for example, be a single module in a multi-module plant, or be of less than commercial scale. It need not include all the unit operations that would be required in a commercial plant, if evidence is submitted showing that the components or subsystems not included have already been successfully demonstrated or are widely used commercially.

If these components or subsystems are being demonstrated elsewhere, or plan to be demonstrated elsewhere, provide complete information on these activities and how they will provide the necessary information for commercialization. To support these decisions or other project decisions, the offeror must specifically show how the proposed project is adequate and appropriate for contributing to the enhancement of technologies, techniques, or processes, or for providing new information to enable the private sector to make rational commercialization decisions.

As part of this discussion, the proposer must indicate how this project relates to other similar work, with specific identification of other demonstrations or commercial technologies that are similar. The degree to which this demonstration represents a technical approach or application not previously or currently being demonstrated must be explained. If some duplication or replication of a previous demonstration in fact is being proposed, the discussion should so indicate, and provide suitable explanation and justification (for example, the use of demonstrated or commercial components, systems, or processes in a unique arrangement), as well as a discussion of the new elements (e.g., different coal type, scale, etc.) of the demonstration.

A discussion must be provided to indicate the areas and degrees of technical uncertainty (e.g., scaleup and/or process integration) that must be resolved to move from the demonstration scale to the commercial scale. The proposal must identify the technical, economic, environmental and operating data needed from the demonstration project which will be required to support the subsequent commercialization activities and discuss how these data will be obtained. The methods for collecting technical data must be discussed sufficiently to assure DOE that all of the necessary data will be collected during

the course of the project. The methods for collecting and disseminating the appropriate environmental, health, and safety data to regulatory agencies and to the general public also should be discussed. Proprietary information should be identified and a means of making this information available for further commercial applications, including third-party licensing, should be presented.

Proposals that include unnecessary elements (e.g., components, systems, processes, or operations that have already been successfully demonstrated or are commercially available) will be considered to be less than fully appropriate. Choice of a project size larger than necessary to provide the key information for commercialization, and/or the scheduling of unnecessary tasks or tests, and/or the collection of unnecessary or of only marginally important data, will also be considered less than fully appropriate. It is recognized that project financing considerations may necessitate the inclusion of components, subsystems, tests, or choice of project scale that is other than that required to provide the minimum necessary technical data. In such instances, the proposer should fully document the extenuating circumstances.

The project will involve the retrofit to, or repowering of, an existing facility. However, the project **may** be conducted at a new facility, in which case the offeror must also address the adequacy, appropriateness, and relevance of such an arrangement.

**Proposal Section II.3.4, "Environmental, Health, Safety, Socioeconomic (EHSS) And Other Site-Related Aspects"**

Proposers must discuss their ability to comply with environmental, health, safety, and socioeconomic (EHSS) statutes and regulations for all phases of the project, EHSS risks and impacts of the proposed clean coal demonstration

project, suitability of the site and/or facility, and the degree to which current emissions of  $\text{SO}_2$  and  $\text{NO}_x$  will be reduced. (EHSS benefits and impacts associated exclusively with future commercialization of the proposed clean coal technology should be described in proposal Volume II, Section II.2.6 rather than in the present Section.) The level of detail provided should be sufficient to enable DOE to evaluate the EHSS aspects of the proposed project, including the probability that the project will be able to comply with EHSS requirements in a timely manner. Following award, more detailed information will be required to comply with the NEPA process (see PON Section 3.27.3).

### **Site Suitability**

Provide information about the suitability of the site and proposed alternative sites, if any. For retrofit and repowering projects, provide a description of the "receiving" installation, distinguishing between the new technology and its components and the existing conventional infrastructure that is not specific to the proposed innovative clean coal technology. Describe the site location and salient characteristics, including the requirements and availability of labor, raw materials, utilities and other infrastructure needed for construction and operation. In the case of key resources such as coal and water, indicate requirements and the plan to acquire them, including sources, methods of extraction, transportation, and beneficiation. For water, indicate potential constraints on availability. Discuss the advantages and disadvantages (for demonstration purposes) of the proposed site and alternatives under active consideration. Describe consideration given to rejected alternative sites and reasons why the proposed active site(s) was (were) chosen.

### **Probability of EHSS Compliance**

Identify EHSS requirements as of January 1, 1988, applicable to the demonstration and describe the capability to comply with relevant EHSS regulations and standards. Estimate environmental discharges (air emissions, water effluents, liquid and solid wastes, etc.) and compare with relevant standards. Describe the scope of EHSS monitoring plans and their relationship to federal, state, and local requirements. Provide data and analyses to support conclusions about compliance, including relevant preproposal test data, analyses of technology and process performance, and information about how any control technologies to be used in the demonstration have been used in applications similar to the one proposed. Summarize the status and schedule for obtaining permits, modifications required for existing facilities, and anticipated impediments to the permitting process. Discuss options available for controlling discharges (e.g., process design variations and alternative control methods) in case of compliance problems (e.g., performance shortcomings or more stringent regulations).

### **EHSS Risks and Impacts**

Identify EHSS risks and impacts of the proposed project, such as potential impacts on human populations, historical sites, parks, wilderness areas, and sensitive resources within the range of influence of the project. Also describe the general approach and any special safeguards and environmental controls that will be used to ensure construction, operation, and dismantlement/disposition (if applicable) in a manner that is protective of project workers and local residents from health and safety risks. In the case

of retrofit, replacement, or addition to an existing facility, directly compare the EHSS attributes of the project to those of the existing facility. Describe discharge reductions or increases resulting from the project; in particular, estimate changes in air emissions and water effluents and their impact on local air and water quality ( $\text{SO}_2$  and  $\text{NO}_x$  are covered below).

### **Reduction of $\text{SO}_2$ and $\text{NO}_x$ Emissions**

Particular emphasis should be given to analysis and discussion about the changes in emissions of  $\text{SO}_2$  and  $\text{NO}_x$  due to the project and related facilities and activities, including the effects of modifications in equipment and operating procedures (e.g., load factor and output). Describe how these emissions are expected to vary over time in relation to demonstration tests and other uses of the facility, including emissions from pre- and post-demonstration project operations. Estimate impacts on air quality of project emissions and changes, including effects of special conditions associated with the emissions, such as locations and stack parameters. Discuss any special considerations that should be taken into account by DOE in evaluating impacts of project-related emissions changes on air quality and acidic deposition, including changes in interstate and transboundary transport.

### **Solid Waste Handling and Utilization**

Describe the provisions for handling and managing solid or liquid wastes, indicating methods for storage, treatment, transportation, reuse, or disposal. Estimate volumes and composition of each waste stream and final product. In case of disposal, indicate whether stabilization or pretreatment will be

required, the availability of disposal sites, and whether liners and monitoring will be required at disposal sites. Describe any plans to construct small scale monitored test disposal cells to provide data on waste leachate environmental interactions that could be used by regulators in determining appropriate disposal options. Estimate disposal costs and discuss the feasibility of using disposal monies to instead subsidize utilization applications to minimize direct disposal of wastes. If utilization of waste is planned, characterize potential uses and markets.

#### **Proposal Section II.3.5, "Technical and Management Approach"**

The proposal must contain sufficient technical discussion of the demonstration project to enable judgment by DOE of the reasonableness and adequacy of the technical approach. A **Statement of Work (SOW)** must be provided as part of the technical discussion. A management discussion must be presented which describes the proposer's overall project management philosophy and organization and discusses the roles and responsibilities of key team members, and the relationships to DOE.

#### Technical Approach

This discussion must include detailed information about the process selected and project proposed for this demonstration. The proposer should include information to describe the detailed plans for the demonstration project at a level of detail appropriate for the planning stage of a demonstration project.

This information should include:

- o Process flow diagrams
- o Energy and mass balances
- o Major equipment requirements
- o Equipment layout sketches
- o Plot plan(s) and off-site requirements
- o General design specifications

- o Unique design specifications (e.g., specialized construction materials requirements)
- o Raw materials and utility requirements (water, limestone, power, coal, etc.)
- o Operating test plan

The offeror must define, and provide a discussion of, the logic for the technical approach employed to complete the project. The discussion must include but not be limited to the following aspects:

- o how pre-demonstration background data will be used to confidently design the demonstration
- o how operations will be conducted to maximize advancement of the technology
- o how project technical and environmental data will be collected, analyzed, and reported
- o rationale for proposed test plan
- o how economic assessments will be performed and used
- o facility disposition planning. This discussion should show the extent to which permanent (non-severable) improvements and other alterations to real property will be made and the proposed approach for disposition of the facility and all property included as part of the project. If operation beyond the life of the project or abandonment in place is proposed, this approach should contain the details of the transition, including necessary coordination with DOE.

As a part of the technical discussion, the offeror must provide a proposed **Statement of Work (SOW)** which, as mutually revised and accepted by DOE and the proposer, will become part of the Cooperative Agreement if negotiations are successfully concluded. The SOW must outline the project tasks according to a **Work Breakdown Structure (WBS)** listing the logical sequence of activities to successfully complete the project. The proposed SOW must clearly define the project work and be structured in accordance with the following WBS:

WBS Level 1 - Total Project

WBS Level 2 - Organized by Phase

WBS Level 3 - Work Tasks/Systems

Project phases should be structured as follows:

Phase 1: Design and Permitting
Phase 2: Construction and Startup
Phase 3: Operation and Disposition

PROJECT  
PHASES

Subdivision of phases is permissible. It is recognized that some proposed projects may have already completed one or more of the above phases. Also, the Model Cooperative Agreement provides for decision points, and the proposed SOW must allow for these decision points. The Government recognizes that time and cost can be reduced if phases overlap (e.g., the purchase of long lead-time items may be initiated before design is completed) and is willing to accommodate the initiation of specific tasks of a later phase before the earlier phase is completed, if deemed necessary.

The SOW must include a definitive list of the deliverables to be furnished to the Government during each phase. If any technical data are to be withheld, they must be identified in accordance with PON Section 3.40, "Rights in Technical Data." The Government also requires the reporting of the technical, economic, and environmental data that will result from the project. The list of required reporting is contained in Attachment C to the Model Cooperative Agreement which is provided as Appendix M of the PON. Proposers are specifically requested to review and consider these reporting requirements and provide for them in the project planning activity.

The SOW must provide for formal project reviews. The number and timing of such reviews are to be proposed and should be consistent with the size and

scope of the demonstration project. Consideration should be given to the need for the following minimum number of reviews:

1. Phase 1: Two (2) reviews to be held at about the 40% and 90% design points. If design is partially or fully completed at the time of award, the project reviews will be adjusted accordingly.
2. Phase 2: Three (3) reviews, to be held at about the 20% point, before startup, and at the completion of Phase 2.
3. Phase 3: One (1) review.

#### Management Approach

As a means of describing the proposed management approach, the proposer should prepare and submit a description of this approach and overall management philosophy and should specifically address how technical and cost and schedule control of the project will be guided. The project management organization should be described, including roles, interrelationships, and responsibilities for each organization. At a minimum, this discussion should include the following:

- o Participant(s) role
- o DOE role
- o Management organization, function, responsibilities, and authorities
- o Detailed Milestone Schedule including Phase decision points
- o Means to measure and control project performance from both a technical and cost standpoint
- o Functional plans to be developed
- o Facilities to be committed

This part of the proposal should convey the proposer's comprehensive understanding of the work planned and management considerations necessary to ensure completion of the project within the cost and schedule proposed.

#### 4.2.6 Summary of Exceptions, Deviations, and Assumptions:

The offeror shall identify and explain any exceptions, deviations, or conditional assumptions taken with respect to the requirements of this Technical Proposal. Any exceptions, deviations, or conditional assumptions taken must contain sufficient explanation and justification to permit evaluation. The benefit to the Government shall be explained for each exception taken. Such exceptions will not, of themselves, automatically cause a proposal to be termed unacceptable. However, a large number of exceptions, or one or more significant exceptions not providing benefit to the Government, **may result in rejection of your proposal as unacceptable.** Selection of a proposal for negotiation will *not* be an indication that DOE accepts the exception, deviation, or conditional assumption contained in the proposal.

#### 4.3 PREPARATION OF VOLUME III: BUSINESS AND MANAGEMENT PROPOSAL

##### 4.3.1 General Instructions:

The Business and Management Proposal consists of the offeror's presentation of his capability to successfully conduct the proposed activities. At a minimum, the Business and Management Proposal must contain the following information in the following order:

- A. Table of Contents
- B. Federal Assistance Application Form
- C. Assurance of Compliance - Nondiscrimination in Federally Assisted Programs
- D. Public Abstract
- E. Project Summary Form
- F. Specific Business and Management Discussion
- G. Exceptions, Deviations, and Conditional Assumptions

Further instructions are provided below.

##### 4.3.2 Application Form and Assurance of Compliance:

The Federal Assistance Application Form and the Assurance of Compliance - Nondiscrimination in Federally Assisted Programs Form are provided as Appendices G and H of this PON. Both items must be completed and signed.

##### 4.3.3 Public Abstract:

A public abstract of not more than 500 words describing the proposed project, the specific innovative clean coal technology proposed, the project's title, the submitter names(s), the full mailing address of the primary submitter, the

makeup of the proposed project team, the methodology or approach to the project, and the anticipated time frame of the demonstration effort. A primary contact to whom *public inquiries* should be directed, and telephone number, are also desirable at the discretion of the submitter. Not more than two 8.5" x 11" diagrams may be submitted by the offeror. This abstract may be released to the public by DOE in whole or in part at any time. It is therefore required that it shall not contain proprietary data or confidential business information. **The form that should be used for the preparation of the public abstract is provided in PON Appendix E; additional sheets may be added as necessary.**

#### 4.3.4 Project Summary Form:

The proposer shall complete and submit the Project Summary Form provided in PON Appendix F in accordance with the following instructions. Information considered to be proprietary or business confidential shall be appropriately marked with asterisks.

- (1) Technology. Same as for the proposal cover forms, Item (2). See PON Section 3.31, "Cover Sheet Instructions."
- (2) Project Title. Same as for the proposal cover forms, Item (3). See PON Section 3.31, "Cover Sheet Instructions."
- (3) Submitter Name(s). Same as for the proposal cover forms, Item (4). See PON Section 3.31, "Cover Sheet Instructions."
- (4) Primary Submitter's Address. Provide the full mailing address of the Participant (see Item (3)). This address should reflect the party whom DOE will contact when necessary; if different from the Participant, this should clearly so be noted.
- (5)(6) Primary Contact and Telephone Number. Enter the name and phone number for the PERSON whom DOE should contact if the need arises. This individual should correspond to the Participant (see Items (3) and (4)); if different from the Participant, this should clearly so be noted.

- (7) Project Location(s). Identify the geographic location(s) of the proposed project to the extent possible.
- (8) County(ies). Corresponds to above Item (7).
- (9) Applications. Refers to the proposer's proposed innovative clean coal technology, e.g., retrofit to coal-fired industrial boiler, repowering of large electric utility generating unit, etc.
- (10) Types of Coal to be Used by the Proposed Demonstration Project, typical sulfur content, and coal bed name, e.g., Pittsburgh number 8 (3% sulfur).
- (11) Coal Source(s). Refers to above Item (10); mine(s) and location(s) if known.
- (12) Coal Use Rate or Other Measure of Proposed Project Size, e.g., 10 tons of coal throughput/hour, 650 MWe power plant retrofit, etc.
- (13) Proposed Duration of Each Project Phase, in months.
- (14) Proposed Project Total Duration, in months.
- (15) Estimated Total Cost of the Project (Submitter and Government).
- (16) Submitter's Proposed Cost Share. State as a percentage (%) of the total given for above Item (15).
- (17) Proposed Project Costs by Phase. Self-explanatory, but must agree with above Items (15) and (16).
- (18) Submitter's Proposed Cost Share for Each Phase. State as percentages (%) of the costs given for above Item (17).
- (19) Project Team Members. List all of the project team members, starting with the Participant. (See PON Section 3.9, "Solicitation Definitions," and PON Section 4.1, "Preparation of Volume I: Qualification Discussion," part (e), "Project Team Agreements.") Use an additional sheet of paper if necessary to complete your list.

#### 4.3.5 Specific Business and Management Discussion:

##### (a) FINANCIAL CONDITION, CAPABILITY TO FINANCE, AND FINANCING PLAN

The proposer shall provide a Financing Plan that specifies the amount(s) and the source(s) of all funds needed for the proposer's cost share for the

project as proposed, including the nature and status of all existing or proposed financing agreements affecting the project. Discuss the degree of certainty that the funds needed will be available when required; include a full description of any liabilities, limitations, conditions, and other factors affecting the availability of the proposer's funds for the project. The proposer shall demonstrate the degree to which such financing shall be available by submitting executed contractual agreements, certifications of private financing, firm letters of intent, or similar documentation.

Additional consideration will be given to definite financing arrangements and to specific plans for providing for any funding shortfall. In the event that project financing will be definitized after selection, clearly describe the approach to be used to secure the necessary financing and provide a milestone schedule which indicates, on a percentage basis of funds required, how and when such funding will be secured.

The proposer must provide current financial statements for all business quarters reported on in the current fiscal year, and an audited financial statement for the prior three fiscal years. If the proposing entity came into existence, was incorporated, was otherwise formed during this interval of time, or will be formed prior to award, audited financial statements of the same type for the same periods of time shall be provided for each and every one of the parent and predecessor organizations, in addition to providing any available financial statements for the new entity, unless this cost share is guaranteed by another party for whom the required financial statements must be provided.

The following checklist is provided as an aide to proposers. Submission by proposers of all information contained in the checklist will assist DOE in determining the reasonableness and adequacy of the financing plan. Proposers are not limited to providing the checklist items; and may submit additional information that the proposer believes will aide DOE in its determinations.

- o The extent to which the proposer will contribute equity funds to the project and the source(s) of such funds;
- o The extent to which the proposer will seek state and local grants, loans or other funding and the source(s) of such funds; and the effect these funds (or lack thereof) have on the successful completion of the project.
- o The extent to which the proposer will seek industry-sponsored research or similar funds and the source(s) of such funds;
- o The extent to which other project participants will contribute equity funds and the source(s) of such funds;
- o The extent to which outside financing will be required and/or sought;
- o The nature and extent of all outside financing anticipated and the prospective source(s) of such funds;
- o Whether the proposer or any other project participant will finance any portion of the required funds on a recourse basis;

- o The types and estimated fair market value of assets (if any) that the proposer and/or such other participant will pledge as collateral for any outside financing;
- o What guarantees (if any) of affiliated or other persons will the proposer or any other participant obtain;
- o Schedule or project funding requirements;
- o Cash flow projections for the entire project, including operation after Phase 3;
- o Capitalization structure of the proposer, other project participants and any guarantors;
- o Proposed terms for repayment of any outside financing;
- o Proposed restrictions on dividends to the proposers and any other project team members prior to repayment of outside financing; and
- o Expected rate regulatory treatment of the project (if appropriate) by state or federal rate making agencies.

(b) COMMITMENT TO THE PROJECT AND TO SUBSEQUENT COMMERCIALIZATION

As evidence of the commitment of top management to the proposed project:

- (1) Indicate the proposer's and the Government's shares of the project cost for each phase of the project as well as for the total project. The Government encourages maximum cost sharing by the proposer and additional consideration will be given for proposer cost sharing above the minimum 50% required, particularly in the early phases since this is regarded as an indication of management commitment to the project.

- (2) Indicate how much of the proposer share represents the proposer's own corporate financing as opposed to third party (outside) funding. The Government views the proposer's own corporate financing as an indication of commitment.
- (3) Describe and explain the priority placed by the proposer's senior management (President, Chairman of the Board, CEO, etc.) and the senior management of key project team members on the work being proposed, other than as evidenced by the percentage of cost sharing, including:
  - o how the proposed project fits into the proposer's overall business, marketing, or energy utilization strategy,
  - o the corporate investment in the technology to date, and
  - o specific statements by top management regarding the project.
  - o evidence of commitment to commercialization beyond the proposed project.

(c) COMMERCIALIZATION PLAN

The proposal must provide a discussion of how the proposed clean coal technology will be commercialized in the 1990's. The discussion should define the proposer's role and the role of other parties in the commercialization process. Discuss all relevant business factors that show how the projected commercialization will be achieved. The discussion should be in sufficient detail to show how the proposed demonstration fits into the commercialization plan. All critical factors required to achieve commercialization, such as financing, licensing, engineering, manufacturing, and marketing, must be identified and addressed. Describe how any needed changes in infrastructure (including distribution, equipment servicing, etc.) that are necessary to achieve the commercialization will be accomplished and include a timetable for commercial development. The commercialization plan must be consistent with the proposed rate of market penetration described below. This market need not

be confined to the retrofit or repowering of existing coal-fired facilities. The specific application(s) envisioned by the offeror should be identified.

The discussion must include a description of the projected market and the projected impact of the proposed innovative clean coal technology in the market plan. The discussion must address the projection of penetration of the proposed technology for the specific application(s) identified, including a time-phased estimate of that penetration both in terms of relative (percentage) penetration and absolute penetration (e.g., tons of coal per year, MWe generated, etc.).

(d) ORGANIZATIONAL CREDENTIALS, AVAILABILITY, AND QUALITY OF PROJECT RESOURCES

The project team for this program shall be described, showing the organizational and functional relationships of key personnel within the corporate and/or project team structure. An organizational chart showing key personnel with man-hours and percentage of key-personnel time that will be devoted to the proposed project shall be included. A statement of availability of all key personnel shall also be included.

Resumes of key personnel, describing education, technical/management experience, and professional development shall be provided. Resumes of personnel identified for specific positions shall indicate relevant qualifications. The proposer should expect that these identified key personnel will be named in the Cooperative Agreement, and any substitutions of key personnel prior to award must be identified and approved by DOE.

Support available to this project must be discussed. This must include both administrative and technical support activities, e.g., laboratories, special equipment, computer facilities, accounting, engineering, etc. In particular, justify the level of support deemed to be necessary for this project. Discuss and describe the location, availability or degree of dedication of the support functions, and the means for coordination. Discuss how small businesses, including those that are socially and economically disadvantaged, will be utilized.

Describe your experience and success with projects involving similar or related technologies, and projects of similar scope or complexity, including those both government-supported and privately-financed. Where this experience was acquired under contract, include the contract number, the name, address, and telephone number of the sponsor's contracting official who administered the contract, a description of the product or service, the contract type, the period of performance, the basis of the competition (price, delivery or technical merit), and the original contract price with reasons for cost variation and schedule slippage, if any.

#### 4.3.6 Summary of Exceptions, Deviations, and Assumptions:

The offeror shall identify and explain any exceptions or deviations taken or conditional assumptions made with respect to the Model Cooperative Agreement (PON Appendix M) or attachments thereto, the requirements of this Business and Management section, or any other section of this PON not addressed in the Technical or Cost volumes. Any exceptions, deviations, or conditional assumptions taken must contain sufficient explanation and justification to permit

evaluation. The benefit to the Government shall be explained for each exception taken. Such exceptions will not, of themselves, automatically cause a proposal to be termed unacceptable. However, a large number of exceptions, or one or more significant exceptions not providing benefit to the Government, **may result in rejection of your proposal as unacceptable.** Selection of a proposal for negotiation will not be an indication that DOE accepts the exception, deviation or conditional assumption contained in the proposal.

#### 4.4 PREPARATION OF VOLUME IV: COST PROPOSAL

##### 4.4.1 General Instructions:

###### (a) INTRODUCTION

This is a "Cost Sharing" cooperative agreement, and the following should be considered when developing the proposed costs for the project. Project costs consist of all allowable costs (as set forth in the Applicable Federal Cost Principles) incurred by the recipient and the value of in-kind contributions made by the proposer or third parties in accomplishing the objectives of the project. Participant cost sharing is the portion of the project cost (as defined above) not borne by the Federal Government.

The proposer is expected to identify all costs associated with the project from award to the end of the project. The proposer shall develop and must propose the costs in phases, by proposer's fiscal year (FY). The phases are Design and Permitting, Construction and Startup, and Operation and Disposition. Phases or sub-phases already completed should not be included as a part of the cost proposal. Additional guidance is provided in Section 4.4.2, "Format and Content," below.

Once the total estimated costs for the project have been developed, the proposer is expected to develop a cost sharing plan which identifies the proposed sharing ratio of the total proposed costs for the Government and for the proposer. The proposer is reminded that the Government's total share of the project cost is not to exceed 50 percent in each phase, and 50 percent overall.

The following definitions shall be considered when developing the Cost Sharing Plan:

PARTICIPANT COST SHARING:	Refers to the amount of the total project cost contributed by or on behalf of the participant.
CASH CONTRIBUTION:	Refers to cash outlays by the participant or third parties.
IN-KIND CONTRIBUTION:	Represents the value of non-cash contribution provided by the participant or third parties. Examples would be the value of property, facilities, equipment, or service.

The cost proposal will be evaluated to determine the reasonableness, allocability, and allowability of the proposed cost and the evaluated probable cost to the Government. The proposal will also be used as the basis for any and all negotiations with the Government if the project is selected for award. The proposals, therefore, should contain adequate, accurate, and well documented information so the Government can understand how your proposed costs were developed.

(b) IDENTIFICATION

All forms, tables, and exhibits submitted must be identified and listed in the table of contents or index. All pages, including forms, must be numbered.

(c) NEW ENTITY/SUBMISSION OF COST FORMS

If a new entity has been formed, or will be formed to undertake the project, a complete set of Standard Form (SF) 1411 forms will be required for each member of the entity, along with the supporting exhibits and documentation.

(d) ROUNDING

Final monetary extensions should be expressed in whole dollars.

(e) DEFINITIONS

Federal Acquisition Regulations (FAR) Part 31, Contract Cost Principles and Procedures, shall be the guide for definition of the cost elements.

(f) SUBCONTRACTS

For all subcontracts expected to exceed \$500,000 the offeror shall obtain and submit a complete set of SF 1411 forms, along with the supporting exhibits and documentation, from each identified subcontractor in this category. For under \$500,000, sufficient information must be submitted to enable DOE to determine the accuracy of the proposed cost to the Government.

4.4.2 Format and Content:

(a) SECTION ONE: COST EXHIBITS

Proposers, identified subcontractors (over \$500,000), and other project team members, must submit separate Exhibits A through F as described in the sub-sections below for their proposed tasks.

Format examples are provided in Appendix K. Additionally, the proposer must submit summary-level Exhibits A through F, incorporating the data from all of the Exhibits A through F.

i. Exhibit A: Standard Form 1411

Submit a complete set of fully executed SF 1411's. The SF 1411 and the Pricing Proposal Summary Addendum must be completed in accordance with the instructions and format attached to the SF 1411. A complete set consists of an SF 1411 and Pricing Proposal Summary Addendum for phase 1, phase 2, phase 3, and total phases 1-3. A complete set is required for each project team member.

Cost data must be fully supported, documented, and traceable. Proposers must reference, when applicable, page numbers, paragraphs, charts, and exhibits. Proposers must also state which elements of their cost proposal are based on actual verifiable data and which elements are based on projections or estimates. Also, discuss the basis of the cost estimate for each elements of cost, i.e., how the labor rates were developed, the indirect rates calculated, consultant rates, material prices, escalation rates, etc.

ii. Exhibit B: Summary of Escalation Factors

This exhibit shall contain, by individual or major element as appropriate, the effective annual escalation rate each proposer expects to experience during the performance of this cooperative agreement. The escalation will be by proposer's fiscal year and will be supported with detailed justification.

iii. Exhibit C: Summary of Indirect Expense Pools and Bases

This exhibit will contain the major base and pool expense groupings by line item and dollar amount. The exhibit shall be prepared covering the

proposer's last two FY's, the current fiscal year, and the estimate for the rest of the project's FY's. The proposer must state at the bottom of the exhibit the inclusive dates of their fiscal year. The proposer must provide detailed explanations for all variances between the items from FY to FY. A Sample Format for the Indirect Cost Data is included as Exhibit C of Appendix K.

iv. Exhibit D: Government Property

If the offeror's proposal is based on the use of Government-furnished property, provide a list of those items on this exhibit. State how the property will be used during this project. Show evidence that this property is available for the proposed project. Also specify (1) the expected amount of utilization (in hours per week); (2) the expected percentage of capacity utilized; and, (3) how much of this utilization is attributable to this cooperative agreement.

For each item of Government-furnished property proposed, an analysis must be attached describing the additional costs which would be incurred should the Government decide not to furnish the proposed property (this includes Government property currently in the proposer's possession).

v. Exhibit E: Work Breakdown Structure

The "Statement of Work" (SOW) as developed by the proposer is intended to define the scope of work for the project. The Work Breakdown Structure (WBS) as proposed by the offeror divides the proposed SOW into identifiable tasks which can be scheduled and priced for the proposal and can later be used for tracking performance. The WBS developed for the

technical proposal provides the basis for the cost estimate and is to be used to estimate the cost in Exhibit E to task level three (see description in Appendix K of this PON) by cost element detail (labor, material, overheads, other indirect cost, etc.). At this time cost information below level three is not desired; however, the cost details to the lowest level of the WBS may be required later and should be ready for submission when requested. The proposed costs in Exhibit E should be expressed in whole dollars and be summarized into estimated costs for the total project, and individual phase, and task.

vi. Exhibit F: Cost Sharing Arrangement

The purposes for this exhibit are two-fold. First is to provide a summary of the proposed cost share for the project, showing the anticipated amounts and calculated percentages for the participants and the totals for each phase. The second is to identify and provide information for the cost sharing portion of the project for each phase. The offeror is reminded that the proposed cost share percentage by the offeror must be at least 50 percent in the first phase, at least 50 percent for each subsequent phase, and at least 50 percent for the total project. The project phases are defined in PON Section 4.2.5, "Discussion of Demonstration Project Factors. In determining the allowable project costs and the Government's share of these costs, the cost sharing policies and guidelines discussed in PON Section 6, "Government Financial Participation," must be adhered to. The cost share amounts for the exhibits should be expressed in whole dollars. As a minimum provide the information required in Exhibit F of Appendix K.

vii. Exhibit G: Pre-award Costs

If pre-award costs are proposed, that is those costs incurred after selection but before award, then an estimate of these costs should be identified and should be included in this exhibit G. These costs should also be included in exhibit A. Additionally, a reference is required back to exhibit A. See PON Section, 6.3 for discussion of pre-award costs.

(b) SECTION TWO: ADDITIONAL INFORMATION

The offeror shall furnish all information required below, if applicable. The offeror shall be responsible for subcontractor and consultant submissions:

i. Subcontracts:

In addition to a subcontract list required by the Material Section in support of the SF 1411, the following information is required for identified subcontracts of \$500,000 or more:

- (1) The number of quotations solicited and received.
- (2) The cost or price analysis accomplished, including a cost element analysis by the offeror as to the allocability, allowability, and reasonableness of the costs proposed.
- (3) Names and addresses of the identified subcontractors tentatively selected and the basis for selection, i.e., low bidder, delivery schedule, technical competence, etc.
- (4) Type of contract contemplated.
- (5) Affiliations with the proposer (prime contractor) if any.

ii. Consultants:

For each consultant proposed, provide an hourly or daily rate, the number of hours or days, and total cost proposed.

(c) SECTION THREE: SUMMARY OF EXCEPTIONS, DEVIATIONS AND ASSUMPTIONS

The offeror shall identify and explain any exceptions, deviations, or conditional assumptions taken with respect to the requirements of this Cost Proposal. Any exceptions, deviations, or conditional assumptions taken must contain sufficient explanation and justification to permit evaluation. The benefit to the Government shall be explained for each exception taken. Such exceptions will not, of themselves, automatically cause a proposal to be termed unacceptable. However, a large number of exceptions, or one or more significant exceptions not providing benefit to the Government, **may result in rejection of the proposal as unacceptable.** Selection of a proposal for negotiation will not be an indication that DOE accepts the exception, deviation or conditional assumption contained in the proposal.

BLANK PAGE

BLANK PAGE

## 5. EVALUATION CRITERIA AND PROGRAM POLICY FACTORS

### 5.1 INTRODUCTION

The prime consideration in the evaluation of proposals for financial assistance is to assess their merit in order to determine those proposals that offer the greatest likelihood of successfully demonstrating and subsequently commercializing emerging innovative clean coal technologies. The process of evaluation will consist of:

- (a) Qualification,
- (b) Preliminary Evaluation,
- (c) Comprehensive Evaluation, and
- (d) Consideration of Program Policy Factors.

The source selection official will select proposal(s) for award taking into account the evaluation criteria and relevant program policy factors in order to determine the mix of projects that will best further the objectives and goals of this PON.

### 5.2 QUALIFICATION

In order to be considered in the Preliminary Evaluation phase, a proposal must successfully pass Qualification. Failure to meet one or more of the Qualification Criteria will result in rejection of the proposal and, therefore, will preclude proceeding to Preliminary Evaluation. In the event that a proposal is rejected, a notice will be sent to the proposer stating the reason(s) that the proposal will not be considered for financial assistance under this solicitation.

The proposal must meet the following **Qualification Criteria**:

- (a) The proposed demonstration project or facility (existing or new) must be located in the United States.
- (b) The proposed demonstration project must be designed for and operated with coal(s). These coals must be from United States mines.
- (c) The offeror must agree to provide a cost share of at least 50 percent of total project cost, with at least 50 percent in each of the three project Phases.
- (d) The proposer must have access to, and use of, the proposed site and any proposed alternate site(s) for the duration of the project.
- (e) The proposed project team must be identified and firmly committed to fulfilling its proposed role in the project.
- (f) The offeror agrees that, if selected, it will submit a "Projected Repayment Schedule" consistent with Section 6.4 of this PON.

### 5.3 PRELIMINARY EVALUATION

In order to be considered in the Comprehensive Evaluation phase, a proposal must successfully pass Preliminary Evaluation. Failure to meet one or more of the Preliminary Evaluation requirements will result in rejection of the proposal and, therefore, will preclude proceeding to Comprehensive Evaluation. In the event that a proposal is rejected, a notice will be sent to the proposer stating the reason(s) that the proposal will not be considered for financial assistance under this solicitation. The requirements to pass Preliminary Evaluation are as follows:

- (a) The proposal must be consistent with the objectives of this PON, as stated in Section 1.2.
- (b) The proposal must contain sufficient technical, cost, and other information, as described in this solicitation, to enable Comprehensive Evaluation. Included herein is an explicit financing plan for the project and project cost information detailed to at least the project, phase and task levels.
- (c) The proposal must be signed by a responsible official of the proposing organization authorized to contractually bind the organization to the performance of the Cooperative Agreement in its entirety.

#### 5.4 COMPREHENSIVE EVALUATION

Proposals passing Preliminary Evaluation will have their Technical Proposals (Volume II), Business and Management Proposals (Volume III), and Cost Proposals (Volume IV) evaluated. The Technical Proposal evaluation is conducted to determine the relative merits of the offeror's proposal in accordance with weighted evaluation criteria. The Technical Proposal evaluation results in a numerical score for each of the evaluation criteria.

The Business and Management Proposal will be evaluated to determine the business and management performance potential of the offeror, and will be used as an aid to determine the offeror's understanding of the technical requirements of this PON. The Business and Management Proposal will be adjectively rated but not point-scored.

The Cost Proposal will be evaluated to assess whether the proposed cost is allocable, allowable, and reasonable. The Cost Proposal will also be used to assess the validity of the proposer's approach to completing the project in accordance with the proposed Statement of Work and the requirements of this PON. No point score will be applied.

#### 5.4.1 Technical Evaluation Criteria:

The Technical Evaluation Criteria are divided into two major categories. The first, "**Commercialization Factors**," addresses the projected commercialization of the proposed technology. This is different from the proposed demonstration project itself. It deals with factors associated with the commercialized version of the proposed process. The criteria in this section will allow consideration of the potential of the technology to reduce emissions from existing coal-fired facilities and the cost effectiveness of the commercial technology in these applications when compared to commercially available technologies.

The second major category, "**Demonstration Project Factors**," deals with the proposed demonstration project itself. Criteria in "Demonstration Project Factors" will allow consideration of technical readiness for scale-up, adequacy, appropriateness and relevance of the demonstration project, the environmental, health, safety, and socioeconomic and other site-related aspects, and the reasonableness and adequacy of the technical and management approach required to execute the project.

#### 5.4.1.1 COMMERCIALIZATION FACTORS

##### (a) ENVIRONMENTAL

The extent to which the proposed technology (or combination of technologies), when used at existing coal-fired facilities, can reduce total national emissions of  $\text{SO}_2$  and/or  $\text{NO}_x$  and reduce transboundary and interstate air pollution, with minimal adverse EHSS impacts. No credit shall be given for reduced emissions in applications where currently available commercial technologies can be used to accomplish reductions at lower cost (i.e., cost per ton of pollutant removed). Additional credit shall be given for technologies that make beneficial use of the solid waste that may be generated.

##### (b) COST-EFFECTIVENESS

The extent to which the proposed technology, when used at existing coal-fired facilities, is likely to improve the cost-effectiveness (i.e., cost per ton of pollutant removed) of controlling emissions of  $\text{SO}_2$  and/or  $\text{NO}_x$ , when compared to currently available commercial technology options to accomplish comparable emission reductions. The extent to which the technology affects the cost of producing electric power will be considered.

#### 5.4.1.2 DEMONSTRATION PROJECT FACTORS

##### (a) TECHNICAL READINESS

Technical readiness for demonstration at the size proposed, as evidenced by the adequacy, availability, suitability, and quality of the data and analyses supporting a decision to advance the technology to demonstration scale.

(b) ADEQUACY, APPROPRIATENESS AND RELEVANCE OF DEMONSTRATION

Adequacy, appropriateness and relevance of the proposed project to contribute to the enhancement of technologies, techniques, or processes, and provide new information to enable the private sector to make rational commercialization decisions whether to employ the proposed technology at existing coal-burning facilities that contribute to transboundary and interstate air pollution.

(c) ENVIRONMENTAL, HEALTH, SAFETY, SOCIOECONOMIC  
(EHSS) AND OTHER SITE-RELATED ASPECTS

Adequacy and appropriateness of proposed approaches to meet and exceed all EHSS requirements during all phases of the proposed project and to mitigate the risks and impacts of the EHSS aspects of the proposed demonstration project. The suitability, quality, and adequacy of the site(s) and/or facility(ies) for the proposed demonstration project. Degree to which current emissions of  $\text{SO}_2$  and/or  $\text{NO}_x$  are reduced, especially emissions which contribute to transboundary air pollution.

(d) TECHNICAL AND MANAGEMENT APPROACH

Reasonableness and adequacy of the technical approach of the proposer to design, construct, operate, and, if applicable, dismantle, the proposed demonstration facility. Quality and completeness of the proposer's Statement of Work (SOW) and management plan for the demonstration project.

#### 5.4.1.3 RELATIVE IMPORTANCE OF TECHNICAL EVALUATION CRITERIA

Section 5.4.1.2, "Demonstration Project Factors," taken together, are of greater importance than the "Commercialization Factors." The "Commercialization Factors," taken together, are worth about two thirds the value of the "Demonstration Project Factors."

Within Section 5.4.1.1, "Commercialization Factors," Criteria (a) and (b) are of equal value.

Within Section 5.4.1.2, "Demonstration Project Factors," criteria (a) and (b) are of equal value, and criteria (c) and (d) are of equal value. Criteria (a) and (b) taken together account for about two thirds of the total point score for Demonstration Project Factors, while criteria (c) and (d) taken together account for the remaining (about one third) point score for Demonstration Project Factors.

#### 5.4.2 Business and Management Evaluation Criteria:

The following business and management evaluation criteria will be applied to evaluate the Business and Management proposal (Volume III) submitted in response to this PON:

##### (a) FINANCIAL CONDITION, CAPABILITY TO FINANCE, AND FINANCING PLAN

Adequacy and completeness of the plan to finance the project. Financial condition and capability of the proposed funding sources to provide the proposed non-Federal share of the project.

**(b) COMMITMENT TO THE PROJECT AND SUBSEQUENT COMMERCIALIZATION**

Degree of priority placed by the team's management on the project and subsequent commercialization, including the extent of cost-sharing above 50 percent, especially in the early phases of the project. Included herein is the degree of project financial risk that is assumed by the offeror, as evidenced by commitment of its own funds to the project.

**(c) COMMERCIALIZATION PLAN**

Adequacy of the plan for bringing the technology from the demonstration to widespread commercial application in the 1990s.

**(d) ORGANIZATIONAL CREDENTIALS, AVAILABILITY, AND  
QUALITY OF PROJECT RESOURCES**

Credentials, experience and commitment of the proposer, key personnel, and other personnel (technical and administrative) and their availability as needed to support the project; along with the proposed available project resources (facilities, etc.) needed to support the project.

**5.4.2.1 RELATIVE IMPORTANCE OF BUSINESS AND MANAGEMENT CRITERIA**

The most important Business and Management criterion is (a), followed, in order of importance, by (c), (b), and (d). Criteria (a) and (b) together account for slightly more than half of the value of the Business and Management volume of the proposal, while criteria (c) and (d) taken together account for slightly less than half of the value of this volume.

#### 5.4.3 Cost Evaluation Criteria:

The Cost Proposal (Volume IV) will be evaluated to determine the reasonableness, allocability, and allowability of the proposed cost.

#### 5.4.4 Relative Importance of Proposal Volumes:

The Technical Proposal (Volume II) is of somewhat greater importance than the Business and Management (Volume III) Proposal.

The Cost Proposal (Volume IV) is of minimal importance relative to the other two volumes, except in the event that everything else is equal, then the Cost Proposal becomes very important.

### 5.5 PROGRAM POLICY FACTORS

Program policy factors are those factors that, while not appropriate indicators of a proposal's individual merit (e.g., technical excellence, proposer ability, and cost), are relevant and essential to the process of choosing which of the proposal(s) received and evaluated, taken together, **will best achieve the program objectives and goals** within the available funds for the program. The following program policy factors will be considered:

- (a) The desirability of selecting projects for retrofitting and/or repowering existing coal-fired facilities that collectively represent a diversity of methods, technical approaches, and applications (including both industrial and utility).
- (b) The desirability of selecting projects that collectively produce some near-term reduction of transboundary transport of emitted SO<sub>2</sub> and NO<sub>x</sub>.

- (c) The desirability of selecting projects that collectively represent an economic approach applicable to a combination of existing facilities that significantly contribute to transboundary and interstate transport of  $\text{SO}_2$  and  $\text{NO}_x$  in terms of facility types and sizes, and coal types.

## 5.6 OTHER CONSIDERATIONS

In the project selection process, DOE will consider giving preference to projects located in states for which the rate-making bodies of those states treat the innovative clean coal technologies the same as pollution control projects or technologies.

The inclusion of this project selection consideration is intended to encourage states to utilize their authorities to promote the adoption of innovative clean coal technology projects as a means of improving the management of air quality within their areas and across broader geographical areas. Recognizing the benefits of pollution control to society, some states offer utilities more favorable rate treatment for pollution control equipment than for other utility investments. States which offer such incentives to innovative clean coal technologies may also serve to offset a portion of the additional risk inherent in demonstrations of new technologies.

Since DOE recognizes that actions pending by a ratemaking body take time to implement, a state will be considered to be treating innovative clean coal technologies the same as pollution control projects or technologies if the state regulatory body has taken action that indicates that the ratemaking body intends to implement such a policy prior to DOE's funding of any affected project(s).

## 6. GOVERNMENT FINANCIAL PARTICIPATION

This section specifies the financial policies and guidelines upon which Government assistance under this Program Opportunity Notice (PON) will be determined.

### 6.1 AMOUNT OF COST SHARING REQUIRED

- o DOE shall not finance more than 50 percent of the total costs of the project as estimated by DOE as of the date of award of financial assistance. In addition, the offeror must cost share at least 50 percent in Phase 1, "Design and Permitting," Phase 2, "Construction and Startup," and Phase 3, "Operation and Disposition."
- o Costs will be shared between DOE and the participant on an "as expended," dollar-for-dollar, basis (reconciled quarterly).

### 6.2 PROJECT COSTS NOT ALLOWED FOR COST SHARING PURPOSES

- o DOE shall not accept valuation for property sold, transferred, exchanged, or otherwise manipulated to acquire a new basis for depreciation purposes or to establish a rental value in circumstances which would amount to a transaction for the mere purpose of responding to this PON.
- o Revenues or royalties from prospective operation of the project, beyond the time considered in the award of financial assistance or proceeds from the prospective sale of the assets of the project, or revenues or royalties from replication of the technology in future projects or plants, are not to be considered cost sharing.

- o Revenues or royalties anticipated from the operation of the project during the time period provided in the financial assistance agreement may not be included in the Financing Plan proposed by the Participant. If, however, such revenues or royalties are, in fact, realized during the time period provided in the financial assistance agreement, the Participant may use them for any purpose.
- o Property which has been fully depreciated will not receive any cost sharing value except to the extent that it has been in continuous use by the proposer during the entire calendar year 1986. (See Section 6.3, below.)
- o Existing facilities, equipment, and supplies, or previously expended research or development funds are not cost sharing for the purposes of this PON, except as amortized, depreciated, or expensed in normal business practice (see Section 6.3, below). Contributions in the form of foregone revenues or replacement power costs will not be considered as cost sharing.
- o Patents, proprietary data, or prior work will not be valued in determining the proposer's cost participation in the cooperative agreement project.
- o Allowable costs which are absorbed by the proposer as its share of cost participation may not be charged directly or indirectly or may not have been charged directly or indirectly in the past to the Federal Government under other contracts, agreements, or grants. Additionally, other appropriated federal funds are not cost-sharing for the purposes of this PON.

- o Foregone fee or profit by the participant will not be considered for cost share purposes. Fee or profit will not be paid to the Participant under the cooperative agreement.

### 6.3 ALLOWABLE PROJECT COSTS FOR COST SHARING PURPOSES

- o Cost participation by the proposer may be accomplished by a contribution of either direct or indirect costs provided such costs are otherwise allowable in accordance with the cost principles applicable to the award.
- o For property contributed to the project and which has been fully depreciated but was in continuous use during the entire calendar year 1986, a fair use value for the life of the project will be assigned by DOE. The fair use value will be the annual average depreciation used by the proposer as permitted under statute or IRS regulations under which it was depreciated.
- o The value that will be allowed for contributions of currently depreciating property and which are of relevance to the project proposed is the depreciation schedule which has been used and is allowed under statute or IRS regulations for the property. This depreciation will be limited in its cost share value to the depreciation claimed during the life of the demonstration project.
- o Contributed land will be valued at its fair rental value for the period of the demonstration.
- o Contributed land, equipment and facilities will be counted as cost sharing only for the periods during which they are actually brought into use for this project. For example, that portion of a facility used for housing

the design team may be credited as a cost share during Phase 1, but contributed equipment to be incorporated in the construction may be credited as a cost share only during those portions of Phases 2 and 3 when actually utilized. Property that is owned by one of the participants and is made available to the project for the project period or any part thereof will be valued in accordance with the principles described above.

- o Value for contributed equipment and facilities will be assigned only to the extent that the facility or equipment is project-related.
- o The cost of disposal of the facility and equipment is an allowable cost, if proposed and if accomplished during phase 3 of the cooperative agreement.
- o In the event that DOE and the offeror execute a cooperative agreement for a project selected for award under this PON, DOE will recognize the costs incurred to acquire and deliver the environmental information generated by the proposer during the time period between selection and the award of the cooperative agreement. Only the information actually delivered and accepted by DOE in an effort to satisfy the requirements of the post-selection site-specific NEPA process (see Appendix J) will be recognized for cost sharing purposes. Generation of environmental information not delivered to, and/or not accepted by, DOE will be considered as excess to the requirements for a site-specific NEPA document and will not be recognized as a contribution under this provision. Notwithstanding the above, for purposes of the preparation of the cost proposal, the proposer must assume that all post-selection site-specific NEPA process costs

occur after award and are shared in proportion to the overall cost share ratio for the total project.

- o The cost incurred between selection and award in the preparation of of material requested by DOE and identified as required for negotiations may be reimbursed in the same ratio as the cost share for the total project, upon signing of the cooperative agreement. Such material may include, but is not limited to:

- Update of project technical description
- Environmental and permitting data
- Recoupment of Government's investment
- Project business structure
- Detailed Financing plan
- Detailed Project management plan
- Detailed Cost estimates
- Schedules
- Commercialization plan
- Detailed Subcontracting plan
- Demonstration site agreement
- Patent, data and licensing
- Federal Assistance Management Summary Report
- Federal Assistance Budget Information Form
- Federal Assistance Milestone Plan

The offeror must include as part of the cost proposal for phase 1, an estimate of such post-selection, pre-award costs. After selection, DOE and the selected offeror will definitize the information required and the costs which will form the basis for subsequent reimbursement, should an award be made.

#### 6.4 RECOVERY OF GOVERNMENT'S INVESTMENT

- o It is the policy of DOE to recover an amount up to the Government's contribution to the project, as adjusted for inflation (based on the Producer Price Index published by the U.S. Department of Labor).

Successful offerors will be required to submit a projected repayment schedule consisting of: (1) Revenue from the sale of equipment that is manufactured as a result of commercialization of the demonstration technology, set at two percent of gross sales, and (2) Revenue from the licensing of the demonstration technology to third party end-users of the technology, set at 3 percent of royalties arising from such licensing.

Recoupment will continue until the Government's share, adjusted for inflation, has been recovered or until 20 years have elapsed from the date specified in the agreement for the end of Phase 3, whichever occurs first.

- o If revenues are received from operation of the project, either during or beyond the time considered in the award of financial assistance, the Participant may use them for any purpose.
- o The decision of whether to dispose of the facility at the end of the cost-shared project, or whether to continue operating the facility at the proposer's expense, is solely the responsibility of the proposer and must be included as part of the proposal. Proceeds from the sale of project assets may be retained by the Participant.

#### 6.5 COST OVERRUNS

The Government is under no obligation to share any cost overruns. However, the Government may, at its own discretion share in the cost of overruns, if funds are available. To the extent that funds are available and federal assistance for overruns is provided, the share of costs incurred during the project that are in excess of those estimated at the date of award of the original financial assistance agreement will not be provided in excess of the

proportion of costs borne by the Government in the initial financial assistance agreement, and then only up to 25 percent of the original Government contribution as specified in the financial assistance agreement.

#### 6.6 FINANCIAL RECORDS

Participants in cooperative agreements are required to maintain financial records adequate to reflect the nature and extent of their costs and to ensure that the required cost participation is achieved.

## APPENDICES

- A. Congressional Guidance
- B. Intention to Propose Form
- C. Proposal Cover Sheets
  - Volume I: Qualification Discussion
  - Volume II: Technical Proposal
  - Volume III: Business and Management Proposal
  - Volume IV: Cost Proposal
- D. Qualification Criteria Certifications
- E. Public Abstract Form
- F. Project Summary Form
- G. Federal Assistance Application Form
- H. Assurance of Compliance: Nondiscrimination in Federally Assisted Programs
- I. The DOE Cost and Environmental Performance Methodology
- J. Information Requirements for the National Environmental Policy Act
- K. Cost Proposal Format (SF 1411) and Exhibits
- L. Uniform Reporting System for Federal Assistance
- M. Model Cooperative Agreement
- N. Environmental Monitoring Plan Guidelines
- O. Detailed Management Plan

Appendix A

**CONGRESSIONAL GUIDANCE**

Joint Resolution Making Further Continuing Appropriations  
for the Fiscal Year 1988, and for Other Purposes

Title II - Related Agencies

DEPARTMENT OF ENERGY  
Clean Coal Technology

*For necessary expenses of, and associated with, Clean Coal Technology demonstrations pursuant to 42 U.S.C. 5901 et seq., \$50,000,000 are appropriated for the fiscal year beginning October 1, 1987, and shall remain available until expended, and \$525,000,000 are appropriated for the fiscal year beginning October 1, 1988, and shall remain available until expended.*

*No later than sixty days following enactment of this Act, the Secretary of Energy shall, pursuant to the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 et seq.), issue a general request for proposals for emerging clean coal technologies which are capable of retrofitting or repowering existing facilities, for which the Secretary of Energy upon review may provide financial assistance awards. Proposals under this section shall be submitted to the Department of Energy no later than ninety days after issuance of the general request for proposals required herein, and the Secretary of Energy shall make any project selections no later than one hundred and sixty days after receipt of proposals: Provided, That projects selected are subject to all provisos contained under this head in Public Law 99-190: Provided further, That pre-award costs incurred by project sponsors after selection and before signing an agreement are allowable to the extent that they are related to (1) the preparation of material requested by the Department of Energy and identified as required for the negotiation; or (2) the preparation and submission of environmental data requested by the Department of Energy to complete National Environmental Policy Act requirements for the projects: Provided further, That pre-award costs are to be reimbursed only upon signing of the project agreement and only in the same ratio as the cost-sharing for the total project: Provided further, That reports on projects selected by the Secretary of Energy pursuant to authority granted under the heading "Clean coal technology" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, which are received by the Speaker of the House of Representatives and the President of the Senate prior to the end of the first session of the 100th Congress shall be deemed to have met the criteria in the third proviso of the fourth paragraph under the heading "Administrative provisions, Department of Energy" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, upon expiration of 30 calendar days from receipt of the report by the Speaker of the House of Representatives and the President of the Senate.*

DEPARTMENT OF ENERGY  
Administrative Provisions

*None of the funds made available to the Department of Energy under this Act shall be used to implement or finance authorized price support or loan guarantee programs unless specific provision is made for such programs in an appropriations Act.*

*The Secretary is authorized to accept lands, buildings, equipment, and other contributions from public and private sources and to prosecute projects in cooperation with other agencies, Federal, State, private, or foreign: Provided, That revenues and other moneys received by or for the account of the Department of Energy or otherwise generated by sale of products in connection with projects of the Department appropriated under this Act may be retained by the Secretary of Energy, to be available until expended, and used only for plant construction, operation, costs, and payments to cost-sharing entities as provided in appropriate cost-sharing contracts or agreements: Provided further, That the remainder of revenues after the making of such payments shall be covered into the Treasury as miscellaneous receipts: Provided further, That any contract, agreement, or provision thereof entered into by the Secretary pursuant to this authority shall not be executed prior to the expiration of 30 calendar days (not including any day in which either House of Congress is not in session because of adjournment of more than three calendar days to a day certain) from the receipt by the Speaker of the House of Representatives and the President of the Senate of a full and comprehensive report on such project, including the facts and circumstances relied upon in support of the proposed project.*

# CONFERENCE REPORT (H. REP. 100-498)

## Conference Report on Pub. L. No. 100-202

### Making Further Continuing Appropriations

### for Fiscal Year 1988, and for Other Purposes

## Title II - Related Agencies

### DEPARTMENT OF ENERGY

#### Clean Coal Technology

#### DEPARTMENT OF ENERGY CLEAN COAL TECHNOLOGY

Appropriates \$575,000,000 for clean coal technology instead of \$350,000,000 as proposed by the House and \$850,000,000 as proposed by the Senate. The comparison by year is as follows:

	House	Senate	Conference
Fiscal year:			
1988	\$50,000,000	\$350,000,000	\$50,000,000
1989	200,000,000	500,000,000	525,000,000
1990	100,000,000		
Total	350,000,000	850,000,000	575,000,000

Bill language, proposed by the House, which would have prohibited using grants has been deleted. The managers agree that project funding is expected to be based on cooperative agreements, but that grants might be applicable to support work also funded from this account.

The managers agree to delete Senate language providing personnel floors for Clean Coal Technology. The managers further agree that the budget estimates for personnel and contract support are to be followed. The agreement includes 58 new positions above current employment floors for the fossil energy organization and 30 positions within the floors. Out of clean coal technology funds, up to \$3,980,000 is for fiscal year 1988 personnel-related costs and up to \$16,520,000 is for all contract costs needed to make project selections and complete negotiations for both clean coal procurements. Contract costs necessary to monitor approved projects should be requested in the fiscal year 1989 budget. Increases above those amounts are subject to reprogramming procedures. No funds other than personnel related costs for the 30 positions included in program direction are to be provided from the fossil energy research and development account.

The length of time for selection of projects by the Secretary of Energy has been extended from 120 days to 160 days based on experience from the original clean coal procurement. Once projects have been selected the Secretary should establish project milestones and guidelines for project negotiations in order to expedite the negotiation process to the extent feasible.

The managers agree that the funds provided are available for non-utility applications as well as for utility applications.

The managers agree that no funds are provided for the demonstration of clean coal technologies which are intended solely for new, stand alone, applications. The Senate had proposed up to 25% of the funds be available for this purpose.

Bill language has been included which provides that reports on projects selected in the first round of clean coal procurements that are received before the end of the first session of the 100th Congress will satisfy reporting requirements 30 calendar days after receipt by Congress. This provision applies to a maximum of two project reports.

Calendar No. 322

100TH CONGRESS }  
1st Session }

SENATE

{ REPORT  
100-165

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES  
APPROPRIATION BILL, 1988

SEPTEMBER 22, 1987.—Ordered to be printed

Mr. BYRD, from the Committee on Appropriations,  
submitted the following

REPORT

[To accompany H.R. 2712]

DEPARTMENT OF ENERGY

CLEAN COAL TECHNOLOGY

1987 appropriation .....	
1988 budget estimate .....	\$350,000,000
House allowance .....	50,000,000
Committee recommendation .....	350,000,000

The Committee recommends an appropriation of \$350,000,000, the same as the budget estimate and an increase of \$300,000,000 above the House allowance. The Committee has also recommended an advance appropriation of \$500,000,000 for fiscal year 1989, the same as the budget estimate for that year and, again, an increase of \$300,000,000

over the House allowance. The Committee has not, at this time, recommended an advance appropriation for fiscal year 1990 which is a decrease of \$500,000,000 below the budget estimate and \$100,000,000 below the House allowance. Neither the Committee nor the House would provide, at this time, \$500,000,000 by advance appropriation for fiscal year 1991 and for 1992 as requested by the administration. The Committee does expect to consider and fully appropriate these funds in a subsequent appropriation bill.

A table detailing the budget estimates and the recommendations for the multiyear program is provided below:

Fiscal year	Budget estimate	House allowance	Committee recommendation
1988.....	\$350,000,000	\$50,000,000	\$350,000,000
1989.....	500,000,000	200,000,000	500,000,000
1990.....	500,000,000	100,000,000	.....
1991.....	500,000,000	.....	.....
1992.....	500,000,000	.....	.....
Total.....	2,350,000,000	350,000,000	850,000,000

The Committee recommendation provides for a single general request for proposals to be issued for emerging clean coal technologies. This request for proposals would constitute the second such request for cost-shared clean coal technology demonstration projects to be solicited by the Department of Energy pursuant to the authorities provided under the Federal Nonnuclear Energy Research and Development Act of 1974 (Public Law 93-577).

The appropriations recommended by the Committee are consistent with amounts requested for fiscal years 1988 and 1989 by the President in his amended budget to the Congress. Further, in late March 1987, the Secretary of Energy announced that the DOE would be prepared to issue a single solicitation for additional clean coal technology projects if appropriations for fiscal years 1988 and 1989, as requested, were made available. The Committee agrees with the announcement made by the administration for solicitation of additional cost-shared projects and also wishes to express support for the need to fulfill the commitment made by the President to the Government of Canada to undertake a joint United States Government/industry multiyear effort to demonstrate innovative clean coal technologies. The Committee joins the House in recommending that the general request for proposals be issued within 60 days of enactment of this act. Proposals are due no later than 90 days after issuance of the request for proposals and the Secretary of Energy must make project selections no later than 120 days after receipt of proposals.

The Committee intends that the majority of appropriations made available for fiscal years 1988 and 1989 be awarded to projects proposing to demonstrate emerging clean coal technologies capable of retrofitting or repowering existing facilities. The Committee also intends that funds be made available to assist in the demonstration of clean coal

technologies in industrial markets as well as applications of these technologies in new facilities. The Secretary may award up to one quarter of the appropriated funds for demonstration of new, stand alone, applications.

The Committee is aware that various projections of electricity growth conclude that the Nation will require greater amounts of new electrical capacity than currently planned by as much as 100,000 megawatts before the end of this century. Given the projected cost advantages and conversion efficiencies of new clean coal technologies and the projected need for new, more efficient capacity which can be constructed or fabricated in shorter periods of time and in smaller, but economical, increments, the Committee believes that it is important that these technologies be available for use in new applications as soon as possible.

In January 1987, industry submitted 139 statements of interest identifying clean coal technology projects in 31 States at a total projected cost in excess of \$5,000,000,000 in response to a congressionally directed solicitation conducted by DOE. Clearly there is more than adequate private sector interest in clean coal technology development to justify the single \$850,000,000 solicitation which the Committee is recommending.

The Committee expects the Secretary to select projects that assure the demonstration of a diversity of technologies; the purpose of the program is to seek to accelerate the development of a number of emerging clean coal technologies. The Secretary should not confine project locations to any one region of the country but should endeavor to assist those projects that are judged to be most qualified. Based on testimony provided from several sources, the Committee understands that the satisfactory demonstration of a particular technology may require the replication and operation of multiple plants. Where similar technologies are selected, succeeding projects are likely to entail less risk to the participants in the project and should require lesser amounts of Federal financing assistance as the technology reaches greater commercial maturity.

In selecting projects, the Committee intends for the Secretary to consider:

1. The projected efficiency and cost effectiveness (including operation and capital costs) of the technology, in its widespread commercial application for the purpose of—
  - (a) energy production; and
  - (b) reduction of atmospheric emissions and liquid effluent and solid waste.
2. The degree, if any, to which the particular technology will effectively reduce atmospheric emissions both of sulfur dioxide and oxides of nitrogen.
3. The extent to which the technology has the potential to be employed at a large number of existing facilities, particularly those facilities which, because of size and location, may contribute to interstate or international pollution.

4. The extent to which the technology can be employed to retrofit or repower existing facilities currently dependent on high-sulfur coal.

5. The extent to which the technology will expand the availability of more cost-effective technologies for air emission control in terms of cost per ton of sulfur and/or nitrogen oxide emissions removed.

The Committee expects that the cost-sharing guidelines with regard to equipment, as set forth in the first solicitation, will be followed in this solicitation for clean coal technology projects. Further, the Committee intends that the Government shall be repaid, up to the Government's contribution in a selected project, if sufficient revenue sources are available as a result of the demonstration undertaken. It is not the intent of the Committee that repayment be obtained from revenues generated by a utility-sponsored demonstration project unless appropriate ratemaking authorities specifically have authorized the recovery of the Government's contribution. However, the commercial sale, lease, manufacture, licensing, or use of the technology demonstrated are appropriate sources of funds for repayment so long as the Secretary determines that such recovery does not place the participant of the selected project at a competitive disadvantage in domestic or international markets.

*Program direction.*—For clean coal technology program administration, the Committee directs that the Department allocate \$18,512,000 from the fiscal year 1988 appropriation of \$350,000,000. These funds are to be used in support of a program solicitation, project selections, contract negotiations, necessary environmental analysis, and for salaries and expenses of the 58 FTE's associated with this second clean coal technology solicitation. Funding in the amount of \$9,570,000 for the 30 FTE's presently on board to support the first solicitation shall be provided from unexpended balances of funds appropriated under this heading in Public Law 99-190. Language requiring the filling of positions allocated for administration of the Clean Coal Program has been included in the bill.

DEPARTMENT OF THE INTERIOR AND RELATED  
AGENCIES APPROPRIATION BILL, 1988

JUNE 18, 1987.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. YATES, from the Committee on Appropriations,  
submitted the following

## REPORT

together with

## ADDITIONAL VIEWS

[To accompany H.R. 2712]

## DEPARTMENT OF ENERGY

## CLEAN COAL TECHNOLOGY

Appropriation enacted, 1987.....	
Budget estimate, 1988.....	\$350,000,000
Recommended, 1988.....	50,000,000
Comparison:	
Appropriation, 1987.....	+ 50,000,000
Budget estimate, 1988.....	— 300,000,000

In clean coal technology, the Committee recommends an appropriation of \$350,000,000 for projects using emerging technologies capable of retrofitting or repowering existing facilities. Of the funds appropriated, \$50,000,000 are available in fiscal year 1988, \$200,000,000 are available in fiscal year 1989 and \$100,000,000 are available in fiscal year 1990. The Committee recommendation is a total of \$2,000,000,000 less than the Administration request, as follows:

	Request	Appropriation
Fiscal year:		
1988.....	\$350,000,000	\$50,000,000
1989.....	500,000,000	200,000,000
1990.....	500,000,000	100,000,000
1991.....	500,000,000	0
1992.....	500,000,000	0
Total.....	2,350,000,000	350,000,000

The Committee recommendation provides for a general request for proposals to be issued for emerging clean coal technologies capable of retrofitting or repowering existing facilities within 60 days of enactment of this Act. Proposals are due no later than 90 days after issuance of the request for proposals, and the Secretary of Energy must make project selections no later than 120 days after receipt of proposals.

Projects selected in this solicitation are subject to all the provisions that were applicable to the so-called "Clean coal one" solicitation provided for in Public Law 99-190. These provisions deal with title to facilities and cost-sharing. In addition the Committee recommends allowing pre-award costs to be reimbursed to successful proposers for provision of data specifically requested by the Department as required for negotiations, or for provision of environmental data requested by the Department to complete National Environmental Policy Act requirements. Such costs are only reimbursable after the project agreement is signed and only in the same cost-sharing ratio that applies to the total project.

The Committee also recommends that grants not be used as a funding mechanism. Cooperative agreements provide more flexibility and the required access to information and project execution not common to the grant process.

As was the case with the first clean coal solicitation, the Committee expects the full \$350,000,000 to be applied to a single solicitation if, as is expected, sufficient industrial interest exists to propose acceptable projects meeting the goals of the program. To carry out the program, the Committee recommends 40 additional full-time equivalent positions and contract support of \$7,000,000. Any additional funds or personnel needed must be separately requested through normal reprogramming procedures or additional appropriations.

The Committee is aware of the controversy surrounding this program. It is for that reason that it recommends proceeding cautiously with the single solicitation. The Committee believes that there is not a convincing argument against a single solicitation aimed at providing improved technology for the control of sulfur and nitrogen oxide emissions from existing coal-burning facilities which cause acid rain. The existence of a program which aims to reduce the cost and efficiency penalties of existing technologies should enhance the nation's ability to reduce acid rain causing emissions and should not inhibit consideration of further controls on emissions by legislative or other measures. With regard to the larger program proposed by the Administration, or a program of subsidizing deployment of already demonstrated technologies, or a program with a broader scope than acid rain technologies, as was contained in the original clean coal appropriation, the Committee believes that additional investigation and debate are necessary before conclusions can be reached as to how to proceed further.

*Retrofit and repowering technology.*—This program is to demonstrate innovative clean coal technologies that can be used to retrofit or repower existing coal-fired facilities. In the context of this program, retrofit technologies are those technologies used to modify existing facilities to reduce air emissions which cause acid rain. In addition to achieving significant emissions reductions,

repowering technologies replace a significant portion of the original facility and often increase capacity, extend the life of the plant, and improve the efficiency of the system.

Retrofit techniques must have the potential to reduce significantly emissions of  $\text{SO}_2$  and  $\text{NO}_x$  and minimize losses in efficiency. Retrofit techniques such as advanced coal cleaning, limestone injection multistage burner, slagging combustors, gas reburning, induct sorbent injection, coal-water mixtures, and advanced flue gas cleanup, used separately or in combination, are expected to control  $\text{SO}_2$  and/or  $\text{NO}_x$ .

Repowering techniques must also have the potential to significantly reduce emissions of  $\text{SO}_2$  and  $\text{NO}_x$ , improve efficiency, and expand the capacity for energy production. Repowering technologies, such as integrated gasification combined cycle (IGCC) and fluidized bed combustion (FBC) are able to reduce both  $\text{SO}_2$  and  $\text{NO}_x$  emissions.

*Environmental Protection Agency (EPA).*—The Committee expects EPA to provide advice on the criteria that are to be developed and used for evaluation. This will be accomplished partly through its representation on the Innovative Control Technology Advisory Panel, which has been created for that purpose by the Department.

In addition, the Department should work with EPA so that EPA can provide advice on the environmental regulatory aspects of the program, and provide technical support, in areas where EPA has relevant technical expertise, to the DOE panel that prepares the solicitation and conducts the evaluation of proposals.

*Project selection criteria.*—In selecting projects, the Committee expects the Secretary to consider:

- (1) the extent to which the technology will expand the availability of more cost-effective technologies for air emission control at existing facilities in terms of cost per ton of sulfur and nitrogen oxide emissions reduced;
- (2) the potential of the technology to reduce transboundary air pollution;
- (3) the degree to which the technology reduces non-air quality pollution from coal combustion; and
- (4) the potential for the technology to increase the efficiency of power production and reduce the cost of producing electric power.

The Committee also expects each project to meet the following general criteria:

- (1) the project will be located at a facility in the United States and will use coal mined in the United States as a feedstock;
- (2) the project will demonstrate a technology appropriate for retrofitting or repowering a significant number of existing coal-fired sources of sulfur and nitrogen oxides as air emissions;
- (3) the project will use a technology that alone or in combination with other control technologies has the potential to reduce significantly current air emissions of sulfur and nitrogen oxides; and

(4) the project will be substantially different in either technology or application than other projects in this or previous clean coal technology solicitations or in existing facilities.

The Committee believes that the Secretary should consider two things above all: the extent of total potential emissions reductions by a technology, based on existing facilities; and if reduction potential is similar among technologies, the cost per ton of emissions reduced.

*Cost-sharing and financial assistance.*—The Committee expects that cost-sharing guidelines with regard to equipment will continue as in the first solicitation. Specifically, these guidelines are:

(1) property that has been fully depreciated shall not receive any cost-sharing value except to the extent that it has been in continuous use by the participant during the calendar year immediately preceding the enactment of this Act. A fair use value for the life of the project may be assigned to this property;

(2) the cost-share value of property that is currently being depreciated is limited to the depreciation claimed during the life of the demonstration project;

(3) contributions in the form of facilities and equipment shall be allowed only to the extent that they would be amortized, depreciated, or expended in normal business practice. Normal business practice shall be determined by the Secretary and is not necessarily the practice of any single participant; and

(4) in determining normal business practice, the Secretary shall not accept valuation for property sold, transferred, exchanged, or otherwise manipulated to acquire a new basis for depreciation purposes, or to establish a rental value in circumstances which would amount to a transaction for the mere purpose of participating in this program. With respect to cost-sharing, tax implications of proposals and tax advantages available to individual proposers shall not be considered in determining the percentage of Federal cost-sharing.

The Committee expects participants in projects to repay the government, up to the government's contribution, if sufficient revenue sources are available. Such sources could include net revenue from operating a project beyond the agreement period (in proportion to relative project contributions); commercial sale, lease, manufacture, licensing, or use of the technology demonstrated; or proceeds from the sale of project assets (in proportion to relative project contributions). Other, non-revenue sources may also be considered.

PUBLIC LAW NO. 99-190

Joint Resolution Making Further Continuing Appropriations  
for the Fiscal Year 1986, and for Other Purposes

TITLE II - Related Agencies

DEPARTMENT OF THE TREASURY  
Energy Security Reserve  
(Including Rescission)

DEPARTMENT OF ENERGY  
Clean Coal Technology

*Provided further, That of the funds in the Energy Security Reserve prior to the date of enactment of this Act \$400,000,000 shall be available for the Clean Coal Technology Program in the Department of Energy authorized under the Clean Coal Technology Reserve proviso of Public Law 98-473 for the purpose of conducting cost-shared Clean Coal Technology projects for the construction and operation of facilities to demonstrate the feasibility for future commercial applications of such technology, to remain available until expended, of which \$100,000,000 shall be immediately available; (2) an additional \$150,000,000 shall be available beginning October 1, 1986; and (3) an additional \$150,000,000 shall be available beginning October 1, 1987: Provided further, That the proviso in Public Law 98-473 depositing and retaining in the Clean Coal Technology Reserve \$750,000,000 of funds in the Energy Security Reserve rescinded by said Act is amended so as to reduce the current amount of such deposited and retained funds to \$350,000,000:*

*Within 60 days following enactment of this Act, the Secretary of Energy shall, pursuant to the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901, et seq.), issue a general request for proposals for clean coal technology projects for which the Secretary of Energy upon review may provide financial assistance awards. Proposals for clean coal technology projects under this section shall be submitted to the Department of Energy within 60 days after issuance of the general request for proposals. The Secretary of Energy shall make any project selections no later than August 1, 1986: Provided, That the Secretary may vest fee title or other property interests acquired under cost-shared clean coal technology agreements in any entity, including the United States: Provided further, That the Secretary shall not finance more than 50 per centum of the total costs of a project as estimated by the Secretary as of the date of award of financial assistance: Provided further, That cost-sharing by project sponsors is required in each of the design, construction, and operating phases proposed to be included in a project: Provided further, That financial assistance for costs in excess of those estimated as of the date of award of original financial assistance may not be provided in excess of the proportion of costs borne by the Government in the original agreement and only up to 25 per centum of the original financial assistance: Provided further, That revenues or royalties from prospective operation of projects beyond the time considered in the award of financial assistance, or proceeds from prospective sale of the assets of the project, or revenues or royalties from replication of technology in future projects or plants are not cost-sharing for the purposes of this appropriation: Provided further, That other appropriated Federal funds are not cost-sharing for the purposes of this appropriation: Provided further, That existing facilities, equipment, and supplies, or previously expended research or development funds are not cost-sharing for the purposes of this appropriation, except as amortized, depreciated, or expensed in normal business practice.*

DEPARTMENT OF ENERGY  
Administrative Provisions

TITLE III - General Provisions

Section 325

*None of the funds made available to the Department of Energy under this Act shall be used to implement or finance authorized price support or loan guarantee programs unless specific provision is made for such programs in an appropriations Act.*

*The Secretary is authorized to accept lands, buildings, equipment, and other contributions from public and private sources and to prosecute projects in cooperation with other agencies, Federal, State, private, or foreign: Provided, That revenues and other moneys received by or for the account of the Department of Energy or otherwise generated by sale of products in connection with projects of the Department appropriated under this Act may be retained by the Secretary of Energy, to be available until expended, and used only for plant construction, operation, costs, and payments to cost-sharing entities as provided in appropriate cost-sharing contracts or agreements: Provided further, That the remainder of revenues after the making of such payments shall be covered into the Treasury as miscellaneous receipts: Provided further, That any contract, agreement or provision thereof entered into by the Secretary pursuant to this authority shall not be executed prior to the expiration of 30 calendar days (not including any day in which either House of Congress is not in session because of adjournment of more than three calendar days to a day certain) from the receipt by the Speaker of the House of Representatives and the President of the Senate of a full and comprehensive report on such project, including the facts and circumstances relied upon in support of the proposed project.*

*SEC. 325. Each amount of budget authority provided in this Act, or made available in the Energy Security Reserve for the Clean Coal Technology Program, for payments not required by law, is hereby reduced by 0.6 per centum: Provided, That such reductions shall be applied ratably to each account, program, activity, and project provided for in this Act;*

## CONFERENCE REPORT (H. REP. 99-450)

### Conference Rep. on Pub. L. 99-190 Making Further Continuing Appropriations for Fiscal Year 1986, and for Other Purposes

#### TITLE II - Related Agencies

##### DEPARTMENT OF THE TREASURY Energy Security Reserve (Including Rescission)

The managers agree to rescind all funds appropriated to the Energy Security Reserve except \$400,000,000 for a clean coal technology program to be administered by the Secretary of Energy in the Department of Energy, and \$10,000,000 for expenses incidental to the closing of the Synthetic Fuels Corporation (SFC). Of the \$400,000,000, \$100,000,000 will be immediately available, \$150,000,000 will be available beginning on October 1, 1986, and \$150,000,000 will be available beginning on October 1, 1987. The remaining funds in the "Clean Coal Technology Reserve" are reduced to \$350,000,000.

##### DEPARTMENT OF ENERGY Clean Coal Technology

The managers have agreed to a \$400,000,000 Clean Coal Technology program as described under the Department of the Treasury, Energy Security Reserve. Bill language is included which provides for the selection of projects no later than August 1, 1986. Within that period, a general request for proposals must be issued within 60 days and proposals must be submitted to the Department within 60 days after issuance of the general request for proposals. Language is also included allowing the Secretary of Energy to vest title in interests acquired under agreements in any entity, including the United States, and delineating cost-sharing requirements. Funds for these activities and projects are made available to the Clean Coal Technology program in the Energy Security program.

It is the intent of the managers that contributions in the form of facilities and equipment be considered only to the extent that they would be amortized, depreciated or expensed in normal business practice. Normal business practice shall be determined by the Secretary and is not necessarily the practice of any single proposer. Property which has been fully depreciated would not receive any cost-sharing value except to the extent that it has been in continuous use by the proposer during the calendar year immediately preceding the enactment of this Act. For this property, a fair use value for the life of the project may be assigned. Property offered as a cost-share by the proposer that is currently being depreciated would be limited in its cost-share value to the depreciation claimed during the life of the demonstration project. Furthermore, in determining normal business practice, the Secretary should not accept valuation for property sold, transferred, exchanged, or otherwise manipulated to acquire a new basis for depreciation purposes or to establish a rental value in circumstances which would amount to a transaction for the mere purpose of participating in this program.

The managers agree that, with respect to cost-sharing, tax implications of proposals and tax advantages available to individual proposers should not be considered in determining the percentage of Federal cost-sharing. This is consistent with current and historical practices in Department of Energy procurements.

It is the intent of the managers that there be full and open competition and that the solicitation be open to all markets utilizing the entire coal resource base. However, projects should be limited to the use of United States mined coal as the feedstock and demonstration sites should be located within the United States.

The managers agree that no more than \$1,500,000 shall be available in FY 1986 and \$2,000,000 each year thereafter for contracting, travel, and ancillary costs of the program, and that manpower costs are to be funded under the fossil energy research and development program.

The managers direct the Department, after projects are selected, to provide a comprehensive report to the Congress on proposals received.

The managers also expect the request for proposals to be for the full \$400,000,000 program, and not only for the first \$100,000,000 available in fiscal year 1986.

Appendix B

**INTENTION TO PROPOSE FORM**



**Department of Energy**  
Washington, DC 20585

APPENDIX B

INTENTION TO PROPOSE

PLEASE REVIEW THIS SOLICITATION. IN ORDER THAT WE CAN UPDATE OUR "SOURCE LIST," PLEASE COMPLETE THE ENTRIES BELOW, AND DETACH AND RETURN THIS PAGE BY THE EARLIEST PRACTICABLE DATE.

\_\_\_\_\_  
WE

\_\_\_\_\_  
DO INTEND TO SUBMIT A PROPOSAL.

\_\_\_\_\_  
DO NOT INTEND TO SUBMIT A PROPOSAL FOR THE FOLLOWING REASONS:

\_\_\_\_\_  
COMPANY NAME: \_\_\_\_\_

\_\_\_\_\_  
AUTHORIZED SIGNATURE: \_\_\_\_\_

\_\_\_\_\_  
TYPED OR PRINTED NAME AND TITLE: \_\_\_\_\_

\_\_\_\_\_  
DATE: \_\_\_\_\_

\_\_\_\_\_  
RETURN THIS PAGE TO:

DEPARTMENT OF ENERGY  
OFFICE OF PROCUREMENT OPERATIONS (MA-452.1)  
CONTRACT OPERATIONS DIVISION "A"  
ROOM NUMBER 11-065  
1000 INDEPENDENCE AVENUE, S.W.  
WASHINGTON, D.C. 20585

ATTN: HERBERT D. WATKINS

PROGRAM OPPORTUNITY NOTICE NO. DE-PS01-88FE61530

FORM DOE-PO-IP-578



# VOLUME IV - COST PROPOSAL

U.S. Department of Energy  
Program Announcement  
for  
Innovative Clean Coal Technology  
Demonstration Projects

for  
DOE  
use

(proposal no.)

## PROPOSAL COVER SHEET

1. Copy Number:  Volume IV - Cost Proposal
2. Technology: \_\_\_\_\_
3. Project Title: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. Submitter Name(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Proprietary Information: Does this submittal contain proprietary of  
business-confidential information? Check - yes ☐ no ☐

If your answer is YES, insert the "Notice re Restrictions on Disclosure and Use of Data" (provided in the Program Announcement) in the space below:

### NOTICE RE RESTRICTIONS ON DISCLOSURE AND USE OF DATA

Appendix D

**QUALIFICATION CRITERIA CERTIFICATIONS**

Qualification Criterion Certification

COST SHARE PERCENTAGES

I, the undersigned authorized representative for \_\_\_\_\_  
(name of organization)  
\_\_\_\_\_, for the proposal entitled \_\_\_\_\_  
\_\_\_\_\_,  
(proposal title)

now being submitted to the U.S. Department of Energy for financial assistance pursuant to Program Opportunity Notice DE-PS01-88FE61530, do hereby certify that the offeror's share of the costs involved in the proposed demonstration will be at least 50 percent of the total costs of the demonstration. Furthermore, the offeror will cost share to the extent of at least 50 percent in each of the three phases: Phase 1, "Design and Permitting," Phase 2, "Construction and Startup," and Phase 3, "Operation and Disposition."

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Offeror

\_\_\_\_\_  
Signature of  
Authorized Representative

\_\_\_\_\_  
Typed Name and Title of  
Authorized Representative

Qualification Criterion Certification

PROJECTED REPAYMENT SCHEDULE

I, the undersigned authorized representative for \_\_\_\_\_  
(name of organization)  
\_\_\_\_\_, for the proposal entitled \_\_\_\_\_  
\_\_\_\_\_,  
(proposal title)

now being submitted to the U.S. Department of Energy for financial assistance pursuant to Program Opportunity Notice DE-PS01-88FE61530, do hereby certify that, if selected for negotiation of a cooperative agreement, a Projected Repayment Schedule will be prepared for the proposed project and submitted to the Department of Energy.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Offeror

\_\_\_\_\_  
Signature of  
Authorized Representative

\_\_\_\_\_  
Typed Name and Title of  
Authorized Representative

Appendix E

**PUBLIC ABSTRACT FORM**

Technology: \_

Project Title: \_

Appendix F

**PROJECT SUMMARY FORM**

(page number)

U.S. Department of Energy  
Program Announcement  
for  
Innovative Clean Coal Technology  
Demonstration Projects

PROJECT SUMMARY FORM

for  
DOE  
use

(proposal no.)

1. Technology: \_\_\_\_\_
2. Project Title: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Submitter Name(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. Primary Submitter's Address:  
  
    Name: \_\_\_\_\_  
\_\_\_\_\_  
  
    Street: \_\_\_\_\_  
  
    City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_ - \_\_\_\_
5. Primary Contact: \_\_\_\_\_
6. Telephone No: (\_\_\_\_) \_\_\_\_ - \_\_\_\_
7. Proj. Location(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. County(ies): \_\_\_\_\_
9. Applications: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. Types of Coal to be Used: \_\_\_\_\_

11. Coal Source(s): \_\_\_\_\_  
\_\_\_\_\_

12. Project Size (Coal use rate or other measure of project size): \_\_\_\_\_ Ton/Hr  
M Wt  
etc.

13. Proposed Duration of Each Project Phase (in months):

<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>
_____ mo.s	_____ mo.s	_____ mo.s

14. Proposed Project Total Duration (in months): \_\_\_\_\_ mo.s

15-18. Estimated Total Project Costs (including both submitter and Government):

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>	<u>Total Project</u>
(17.) <u>Proposed Cost:</u> \$	_____	\$ _____	\$ _____	(15.) \$ _____
(18.) <u>Submitters Share:</u>	_____%	_____%	_____%	(16.) _____%

19. Project Team Members:

(a) Name or Corporate Identity: \_\_\_\_\_  
\_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_ - \_\_\_\_

(b) Name or Corporate Identity: \_\_\_\_\_  
\_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_ - \_\_\_\_

(c) Name or Corporate Identity: \_\_\_\_\_  
\_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_ - \_\_\_\_

(Attach a page if needed to list additional members)

Appendix G

**FEDERAL ASSISTANCE APPLICATION FORM**

FEDERAL ASSISTANCE		2. APPLICANT'S APPLICATION IDENTIFIER	a. NUMBER	3. STATE APPLICATION IDENTIFIER	a. NUMBER
1. TYPE OF SUBMISSION (Mark appropriate box) <input type="checkbox"/> NOTICE OF INTENT (OPTIONAL) <input type="checkbox"/> PREAPPLICATION <input type="checkbox"/> APPLICATION		b. DATE Year month day 19		b. DATE ASSIGNED Year month day 19	
4. LEGAL APPLICANT/RECIPIENT a. Applicant Name b. Organization Unit c. Street/P.O. Box d. City e. State f. Contact Person (Name & Telephone No.)		e. County g. ZIP Code		5. EMPLOYER IDENTIFICATION NUMBER (EIN)  6. PRO-GRAM (From CFDA) a. NUMBER b. TITLE	
7. TITLE OF APPLICANT'S PROJECT (Use section IV of this form to provide a summary description of the project.)		8. TYPE OF APPLICANT/RECIPIENT A—State B—Intermediate C—Substate D—County E—City F—School District G—Special Purpose District H—Community Action Agency I—Higher Educational Institution J—Indian Tribe K—Other (Specify): Enter appropriate letter		11. TYPE OF ASSISTANCE A—State Grant B—Supplemental Grant C—Loan D—Insurance E—Other Enter appropriate letter(s)	
9. AREA OF PROJECT IMPACT (Name of cities, counties, states, etc.)		10. ESTIMATED NUMBER OF PERSONS BENEFITING		14. TYPE OF APPLICATION A—New B—Renewed C—Revision D—Continuation E—Augmentation Enter appropriate letter	
12. PROPOSED FUNDING a. FEDERAL \$ .00 b. APPLICANT .00 c. STATE .00 d. LOCAL .00 e. OTHER .00 f. Total \$ .00		13. CONGRESSIONAL DISTRICTS OF: a. APPLICANT b. PROJECT 15. PROJECT START DATE Year month day 19 16. PROJECT DURATION Months 17. DATE DUE TO FEDERAL AGENCY Year month day 19		17. TYPE OF CHANGE (For 14c or 14d) A—Increase Dollars B—Decrease Dollars C—Increase Duration D—Decrease Duration E—Continuation F—Other (Specify): Enter appropriate letter(s)	
19. FEDERAL AGENCY TO RECEIVE REQUEST a. ORGANIZATIONAL UNIT (IF APPROPRIATE) b. ADMINISTRATIVE CONTACT (IF KNOWN) c. ADDRESS		20. EXISTING FEDERAL GRANT IDENTIFICATION NUMBER		21. REMARKS ADDED <input type="checkbox"/> Yes <input type="checkbox"/> No	
22. THE APPLICANT CERTIFIES THAT: To the best of my knowledge and belief, data in this preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.		a. YES, THIS NOTICE OF INTENT/PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE b. NO, PROGRAM IS NOT COVERED BY E.O. 12372 OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW			
23. CERTIFYING REPRESENTATIVE a. TYPED NAME AND TITLE b. SIGNATURE		24. APPLICATION RECEIVED 19 Year month day 25. FEDERAL APPLICATION IDENTIFICATION NUMBER 26. FEDERAL GRANT IDENTIFICATION			
27. ACTION TAKEN <input type="checkbox"/> a. AWARDED <input type="checkbox"/> b. REJECTED <input type="checkbox"/> c. RETURNED FOR AMENDMENT <input type="checkbox"/> d. RETURNED FOR E.O. 12372 SUBMISSION BY APPLICANT TO STATE <input type="checkbox"/> e. DEFERRED <input type="checkbox"/> f. WITHDRAWN		28. FUNDING a. FEDERAL \$ .00 b. APPLICANT .00 c. STATE .00 d. LOCAL .00 e. OTHER .00 f. TOTAL \$ .00		29. ACTION DATE 19 Year month day 30. STARTING DATE 19 Year month day 31. CONTACT FOR ADDITIONAL INFORMATION (Name and telephone number) 32. ENDING DATE 19 Year month day 33. REMARKS ADDED <input type="checkbox"/> Yes <input type="checkbox"/> No	

## GENERAL INSTRUCTIONS FOR THE SF-424

This is a standard form used by applicants as a required facesheet for preapplications and applications submitted in accordance with OMB Circular A-102. It will be used by Federal agencies to obtain applicant certification that states which have established a review and comment procedure in response to Executive Order 12372 and have selected the program to be included in their process have been given an opportunity to review the applicant's submission.

### APPLICANT PROCEDURES FOR SECTION I

Applicant will complete all items in Section I with the exception of Box 3, "State Application Identifier." If an item is not applicable, write "NA." If additional space is needed, insert an asterisk "\*" and use Section IV. An explanation follows for each item:

- | Item   | Item  |
|--|---|
| 1. Mark appropriate box. Preapplication and application are described in OMB Circular A-102 and Federal agency program instructions. Use of this form as a Notice of Intent is at State option. Federal agencies do not require Notices of Intent.   | (a revision or augmentation under item 14), indicate only the amount of the change. For decreases, enclose the amount in parentheses. If both basic and supplemental amounts are included, breakout in Section IV. For multiple program funding, use totals and show program breakouts in Section IV. 12a—amount requested from Federal Government. 12b—amount applicant will contribute. 12c—amount from State, if applicant is not a State. 12d—amount from local government, if applicant is not a local government. 12e—amount from any other sources, explain in Section IV. |
| 2a. Applicant's own control number, if desired.  | 13b. The district(s) where most of action work will be accomplished. If city-wide or State-wide, covering several districts, write "city-wide" or "State-wide."   |
| 2b. Date Section I is prepared (at applicant's option).  | 14. A. New. A submittal for project not previously funded.  |
| 3a. Number assigned by State.  | B. Renewal. An extension for an additional funding/budget period for a project having no projected completion date, but for which Federal support must be renewed each year.  |
| 3b. Date assigned by State.  | C. Revision. A modification to project nature or scope which may result in funding change (increase or decrease).   |
| 4a-4h. Legal name of applicant, name of primary organizational unit which will undertake the assistance activity, complete address of applicant, and name and telephone number of the person who can provide further information about this request.   | D. Continuation. An extension for an additional funding/budget period for a project with a projected completion date.   |
| 5. Employer Identification Number (EIN) of applicant as assigned by the Internal Revenue Service.  | E. Augmentation. A requirement for additional funds for a project previously awarded funds in the same funding/budget period. Project nature and scope unchanged.   |
| 6a. Use Catalog of Federal Domestic Assistance (CFDA) number assigned to program under which assistance is requested. If more than one program (e.g., joint funding), check "multiple" and explain in Section IV. If unknown, cite Public Law or U.S. Code.  | 15. Approximate date project expected to begin (usually associated with estimated date of availability of funding).   |
| 6b. Program title from CFDA. Abbreviate if necessary.  | 16. Estimated number of months to complete project after Federal funds are available.   |
| 7. Use Section IV to provide a summary description of the project. If appropriate, i.e., if project affects particular sites as, for example, construction or real property projects, attach a map showing the project location.   | 17. Complete only for revisions (item 14c), or augmentations (item 14e).  |
| 8. "City" includes town, township or other municipality.   | 18. Date preapplication/application must be submitted to Federal agency in order to be eligible for funding consideration.  |
| 9. List only largest unit or units affected, such as State, county, or city.   | 19. Name and address of the Federal agency to which this request is addressed. Indicate as clearly as possible the name of the office to which the application will be delivered.   |
| 10. Estimated number of persons directly benefiting from project.  | 20. Existing Federal grant identification number if this is not a new request and directly relates to a previous Federal action. Otherwise, write "NA."   |
| 11. Check the type(s) of assistance requested.<br>A. Basic Grant—an original request for Federal funds.<br>B. Supplemental Grant—a request to increase a basic grant in certain cases where the eligible applicant cannot supply the required matching share of the basic Federal program (e.g., grants awarded by the Appalachian Regional Commission to provide the applicant a matching share).<br>E. Other. Explain in Section IV. | 21. Check appropriate box as to whether Section IV of form contains remarks and/or additional remarks are attached.   |
| 12. Amount requested or to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions should be included. If the action is a change in dollar amount of an existing grant   |   |

### APPLICANT PROCEDURES FOR SECTION II

Applicants will always complete either item 22a or 22b and items 23a and 23b.

- |   |  |
|---|--|
| 2a. Complete if application is subject to Executive Order 12372 (State review and comment). | 22b. Check if application is not subject to E.O. 12372.              |
|   | 23a. Name and title of authorized representative of legal applicant. |

### FEDERAL AGENCY PROCEDURES FOR SECTION III

Applicant completes only Sections I and II. Section III is completed by Federal agencies.

- |   |  |
|---|--|
| 5. Use to identify award actions.   | will contribute. 28c—amount from State, if applicant is not a State. 28d—amount from local government. If applicant is not a local government. 28e—amount from any other sources, explain in Section IV. |
| 7. Use Section IV to amplify where appropriate.   | 29. Date action was taken on this request.   |
| 3. Amount to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions will be included. If the action is a change in dollar amount of an existing grant (a revision or augmentation under item 14), indicate only the amount of change. For decreases, enclose the amount in parentheses. If both basic and supplemental amounts are included, breakout in Section IV. For multiple program funding, use totals and show program breakouts in Section IV. 28a—amount awarded by Federal Government. 28b—amount applicant | 30. Date funds will become available.  |
|   | 31. Name and telephone number of agency person who can provide more information regarding this assistance.   |
|   | 32. Date after which funds will no longer be available for obligation.   |
|   | 33. Check appropriate box as to whether Section IV of form contains Federal remarks and/or attachment of additional remarks.   |

Appendix H

**ASSURANCE OF COMPLIANCE:  
NONDISCRIMINATION IN FEDERALLY ASSISTED PROGRAMS**

**U.S. Department of Energy**

**Assurance of Compliance**

**Nondiscrimination in Federally Assisted Programs**

(Hereinafter called the "Applicant") HEREBY AGREES to comply with Title VI of the Civil Rights Act of 1964 (Pub. L. 88-352), Section 16 of the Federal Energy Administration Act of 1974 (Pub. L. 93-275), Section 401 of the Energy Reorganization Act of 1974 (Pub. L. 93-438), Title IX of the Education Amendments of 1972, as amended, (Pub. L. 92-318, Pub. L. 93-568, and Pub. L. 94-482), Section 504 of the Rehabilitation Act of 1973 (Pub. L. 93-112), the Age Discrimination Act of 1975 (Pub. L. 94-135), Title VIII of the Civil Rights Act of 1968 (Pub. L. 90-284), the Department of Energy Organization Act of 1977 (Pub. L. 95-91), and the Energy Conservation and Production Act of 1976, as amended, (Pub. L. 94-385). In accordance with the above laws and regulations issued pursuant thereto, the Applicant agrees to assure that no person in the United States shall, on the ground of race, color, national origin, sex, age, or handicap, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity in which the Applicant receives Federal assistance from the Department of Energy.

**Applicability and  
Period of Obligation**

In the case of any service, financial aid, covered employment, equipment, property, or structure provided, leased, or improved with Federal assistance extended to the Applicant by the Department of Energy, this assurance obligates the Applicant for the period during which Federal assistance is extended. In the case of any transfer of such service, financial aid, equipment, property, or structure, this assurance obligates the transferee for the period during which Federal assistance is extended. If any personal property is so provided, this assurance obligates the Applicant for the period during which it retains ownership or possession of the property. In all other cases, this assurance obligates the Applicant for the period during which the Federal assistance is extended to the Applicant by the Department of Energy.

**Employment Practices**

Where a primary objective of the Federal assistance is to provide employment or where the Applicant's employment practices affect the delivery of services in programs or activities resulting from Federal assistance extended by the Department, the Applicant agrees not to discriminate on the ground of race, color, national origin, sex, age, or handicap, in its employment practices. Such employment practices may include, but are not limited to, recruitment, recruitment advertising, hiring, layoff or termination, promotion, demotion, transfer, rates of pay, training and participation in upward mobility programs; or other forms of compensation and use of facilities.

**Subrecipient Assurance**

The Applicant shall require any individual, organization, or other entity with whom it subcontracts, subgrants, or subleases for the purpose of providing any service, financial aid, equipment, property, or structure to comply with laws cited above. To this end, the subrecipient shall be required to sign a written assurance form, however, the obligation of both recipient and subrecipient to ensure compliance is not relieved by the collection or submission of written assurance forms.

**Data Collection and  
Access to Records**

The Applicant agrees to compile and maintain information pertaining to programs or activities developed as a result of the Applicant's receipt of Federal assistance from the Department of Energy. Such information shall include, but is not limited to, the following: (1) the manner in which services are or will be provided and related data necessary for determining whether

any persons are or will be denied such services on the basis of prohibited discrimination; (2) the population eligible to be served by race, color, national origin, sex, age and handicap; (3) data regarding covered employment including use or planned use of bilingual public contact employees serving beneficiaries of the program where necessary to permit effective participation by beneficiaries unable to speak or understand English; (4) the location of existing or proposed facilities connected with the program and related information adequate for determining whether the location has or will have the effect of unnecessarily denying access to any person on the basis of prohibited discrimination; (5) the present or proposed membership by race, color, national origin, sex, age and handicap, in any planning or advisory body which is an integral part of the program; and (6) any additional written data determined by the Department of Energy to be relevant to its obligation to assure compliance by recipients with laws cited in the first paragraph of this assurance.

The Applicant agrees to submit requested data to the Department of Energy regarding programs and activities developed by the Applicant from the use of Federal assistance funds extended by the Department of Energy. Facilities of the Applicant (including the physical plants, buildings, or other structures) and all records, books, accounts, and other sources of information pertinent to the Applicant's compliance with the civil rights laws shall be made available for inspection during normal business hours on request of an officer or employee of the Department of Energy specifically authorized to make such inspections. Instructions in this regard will be provided by the Director, Office of Equal Opportunity, U.S. Department of Energy.

This assurance is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts (excluding procurement contracts), property, discounts or other Federal assistance extended after the date hereto, to the Applicants by the Department of Energy, including installment payments on account after such date of application for Federal assistance which are approved before such date. The Applicant recognizes and agrees that such Federal assistance will be extended in reliance upon the representations and agreements made in this assurance and the the United States shall have the right to seek judicial enforcement of this assurance. This assurance is binding on the Applicant, its successors, transferees, and assignees, as well as the person whose signature appears below and who is authorized to sign this assurance on behalf of the Applicant.

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Name of Applicant)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Authorized Official)

( )

\_\_\_\_\_  
(Applicant's Telephone Number)

## Appendix I

### THE DOE COST AND ENVIRONMENTAL PERFORMANCE METHODOLOGY

## 1. INTRODUCTION

The Department of Energy (DOE) will evaluate the life cycle costs for mature versions of the technologies proposed under the Innovative Clean Coal Technology Solicitation. DOE has developed worksheets to assist in completing this evaluation. The purpose of these worksheets is to obtain projections from the offeror for the technical, environmental, and economic performance of mature, fully-commercial versions of the proposed technology.

A basis for comparison is established by requiring that each offeror apply an extrapolated, mature version of his technology (or combined technologies) to a reference plant(s). Conceptual design details of reference plants that are expected to be appropriate for many offerors are provided in this Appendix: a reference 500 MWe coal-fired utility plant and/or a specification for a reference 750 ton/hr coal processing plant. Since the reference 500MWe scale may not be the most relevant for some proposed technologies, data for an alternative reference 250 MWe power plant are also provided in Appendix I. These data are found contained within brackets, [data], throughout this Appendix. In addition, Table 3A and Figures 2A, 3A, 4A, and 5A are provided to document the alternative reference 250 MWe power plant configuration. It is recognized that performance and cost parameters for clean coal technologies are site specific because of the interfaces between the new equipment and the existing plant. However, the reference plants are defined in order to ensure a degree of uniformity. Application of the proposer's technology to the reference plant(s) will result in a "base case" design. From this base case, proposers must also provide performance and cost data for a matrix of four "sensitivity cases" to help DOE evaluate the potential applicability and cost effectiveness of the proposed technology over a range of boiler types, unit sizes, and coal characteristics. This information is necessary to evaluate each technology against the Commercialization Factors in PON Section 5.4.1.1. The offeror is reminded that if a different reference plant is more appropriate for the proposed technology, it should be provided by the offeror and documented at a comparable level of detail to the power plant provided in this Appendix.

Proposers of coal processing technologies are required to develop two sets of data for each of the five cases (i.e., base case plus four sensitivity cases). One set defines the characteristics of the 750 tph coal processing plant and the second defines the effect of the coal derived fuel on the base case power plant.

Blank copies of the worksheets to be filled in and submitted to DOE as part of the proposal are provided in this Appendix. Also included are instructions for completing the worksheets.

## 2. REFERENCE PLANTS

This section defines the reference power plant and a specification for a base case coal processing plant to be used by proposers as applicable to their technologies.

## 2.1 General Description of Reference Power Plant

The reference power plant is an existing plant which is to serve as the basis for generating a base case for the proposed clean coal technology. The reference power plant is a subcritical, pulverized coal-fired plant that is nominally 500 [250] MWe (net) in size, with no provision for SO<sub>2</sub> and NO<sub>x</sub> emission control. The reference plant design[s] described in this document is based on modifications of a conceptual design presented in a report by Argonne National Laboratory .

In this reference plant, space was allotted for contingency coal handling equipment and is shown in dotted outline on Figures 2, 3, and 4. In utilizing this reference plant configuration, this space is available for other uses if not needed for coal handling equipment.

The reference plant is located in the East Central Region of the continental United States. Site conditions are given in Table 1. The power plant is 30 years old and in average condition for its age. It is intended that the proposed retrofit or repowering be a part of a general plan to extend the plant's expected operational lifetime to 60 years.

TABLE 1

Site Conditions for Reference Plant

600 Feet Elevation	Dry Bulb Design Temperature, 60 <sup>0</sup> F
Seismic Zone 1	Wet Bulb Design Temperature, 52 <sup>0</sup> F
Pile Foundations as Required	Maximum Dry Bulb Temperature, 95 <sup>0</sup> F
River Water Supply	Maximum Wet Bulb Temperature, 75 <sup>0</sup> F
Rail Access	Minimum Temperature, -10 <sup>0</sup> F
14.4 psia, Ambient Design Pressure	

Coal is delivered by unit train. Provision for a 60-day dead coal storage area is included on site. Live storage retrieval and conveyors deliver 500 [250] tons per hour (tph) of coal to two 500 [250] tph crushers. The crushed coal is conveyed to the distribution bins. At design conditions, the reference unit consumes 196 [98] tph of coal; the analysis of the reference coal (a simulated Upper Freeport coal, Armstrong County, Pennsylvania) is presented in Table 2.

\* "Design of Advanced Fossil Fuel Systems: A Study of Three Developing Technologies for Coal-Fired, Base-Load Electric Power Generation, Pulverized, Coal-Fired Power Plant with a Wet Limestone Flue Gas Desulfurization System." Prepared by Bechtel Group, Inc., For Argonne National Laboratory, Report Number ANL/FE-83-10.

TABLE 2

## Reference Coal Analysis

<u>Proximate Analysis</u> <u>(AR Basis), % wt</u>		<u>Sulfur Forms, % wt</u>	
Volatile Matter	30.6	Pyritic	2.0
Fixed Carbon	50.0	Organic	0.4
Ash	16.4	Sulfate	<u>0.1</u>
Moisture	<u>3.0</u>		2.5
	100.0	<u>Ash Fusion, °F</u>	
<u>Ultimate Analysis</u> <u>(AR Basis), % wt</u>		Initial Deformation	2,200
Moisture	3.0	Softening (H = W)	2,275
Carbon	67.5	Fluid	2,400
Hydrogen	4.6	<u>Other Parameters</u>	
Nitrogen	1.2	Gross Heating Value,	
Chlorine	0.1	Btu/lb (AR Basis)	12,360
Sulfur	2.5	Grindability, Hardgrove	58.0
Oxygen	4.7	Total Sulfur, % wt	2.50
Ash	<u>16.4</u>	Free Swelling Index	7.5
	100.0		

The turbine throttle steam conditions are nominally 2,400 psig and 1,000°F, with 1,000°F reheat. The maximum rated capacity of the power plant could be approximately 10 percent higher than rated with the turbine throttle valves wide open and 5 percent over-pressure, if selected balance of plant equipment items were sized to accommodate this operating condition. A plot plan of the approximately 400 [300]-acre site is presented in Figure 1.

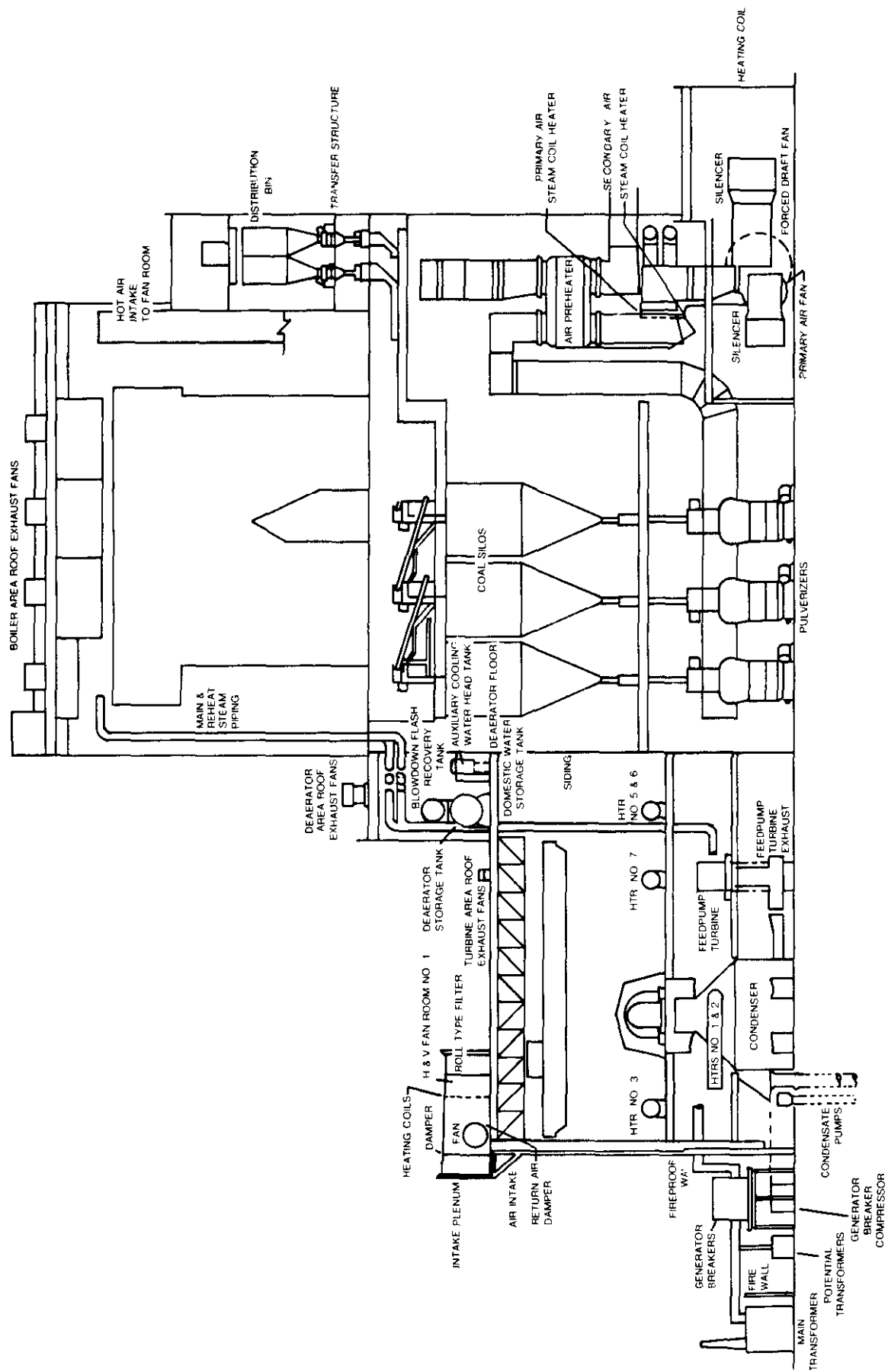
### 2.1.1 Power Plant Equipment

Arrangement drawings, Figures 2, 3, and 4, show the major equipment location within modules in the reference plant. Table 3 provides data on the mechanical equipment in the plant. The following descriptions provide additional detail for major plant modules.

The turbine-generator module is in good condition and does not need refurbishment. It is located in a fully enclosed 100 [80] by 200 [160]-foot structure containing the turbine generator and its related equipment. An auxiliary bay runs the length of the building. A bay at the front end of the turbine generator accommodates main steam and reheat piping. A bay at the generator end permits generator rotor removal. The turbine building is approximately 100 feet high.

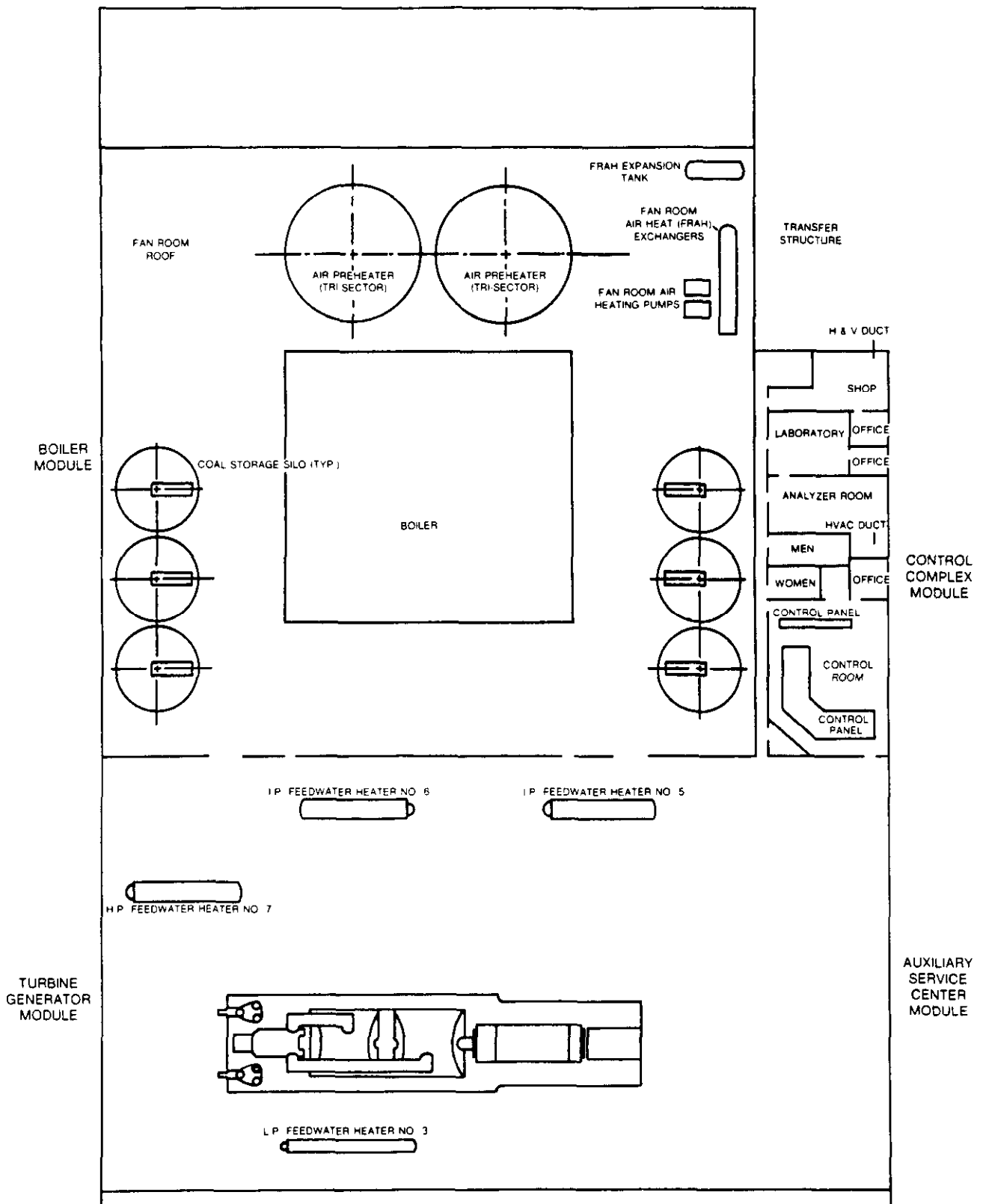
Superheated steam for the turbine-generator is supplied by a drum-type,



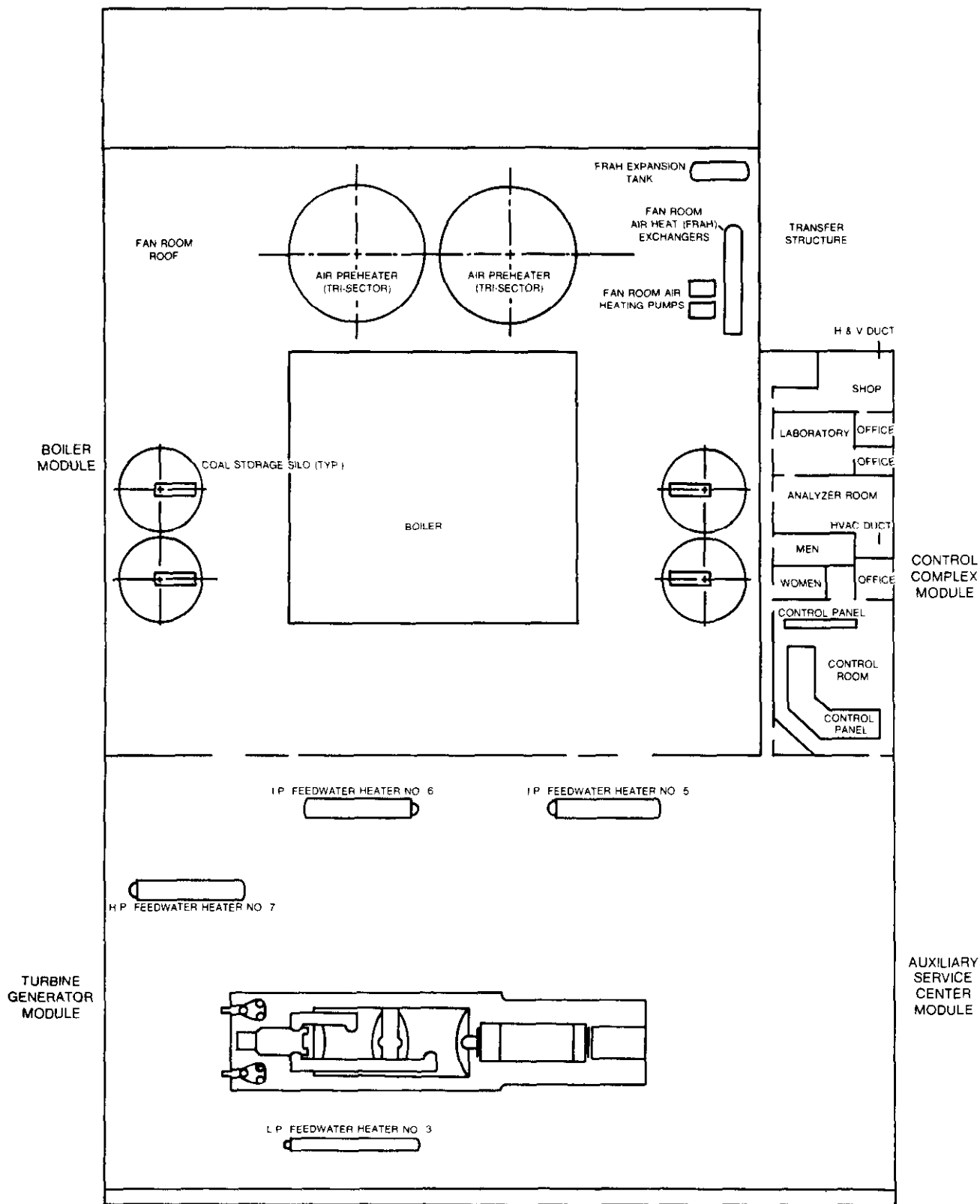


**Figure 2. 500 MWe Reference Plant Arrangement Elevation**

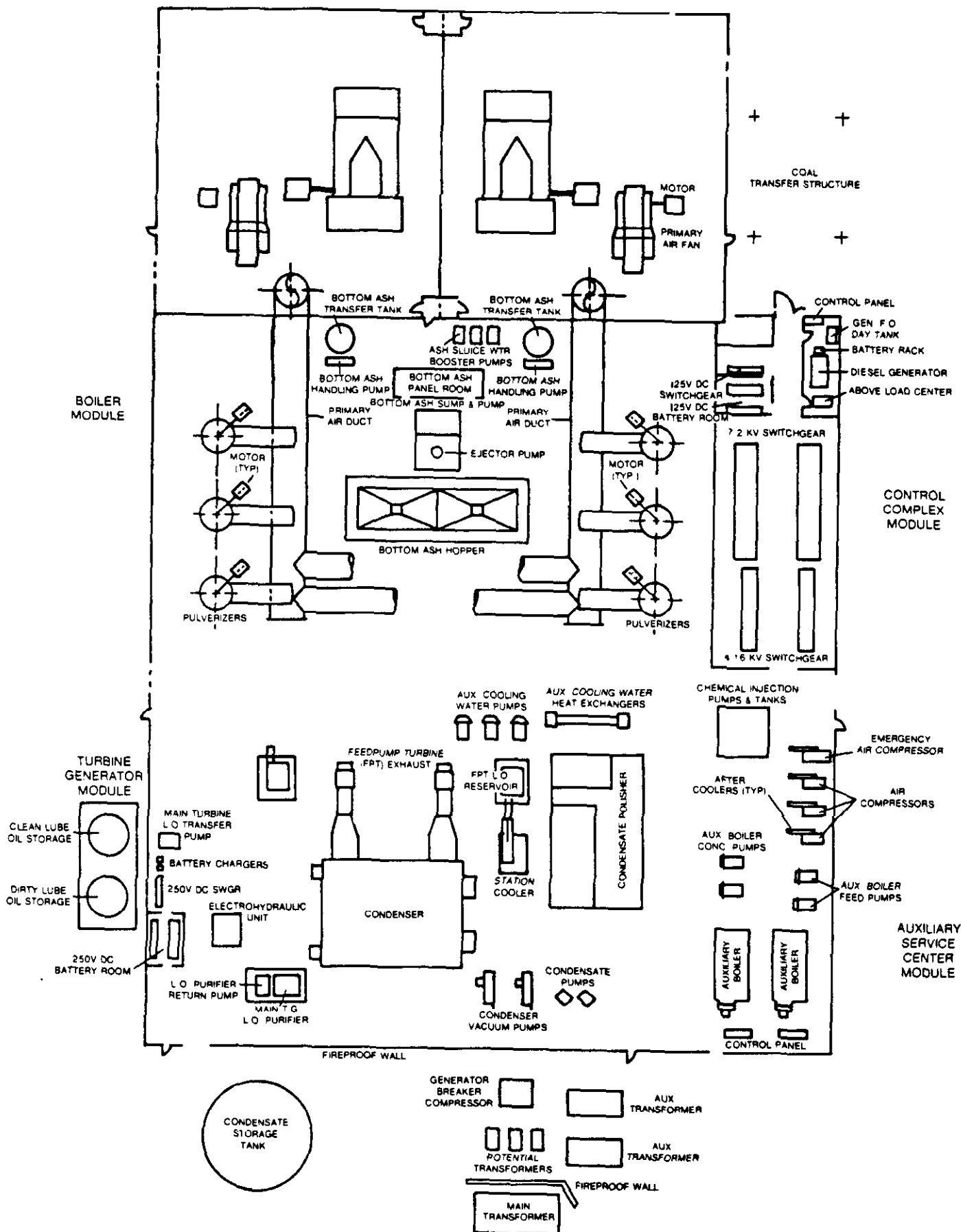


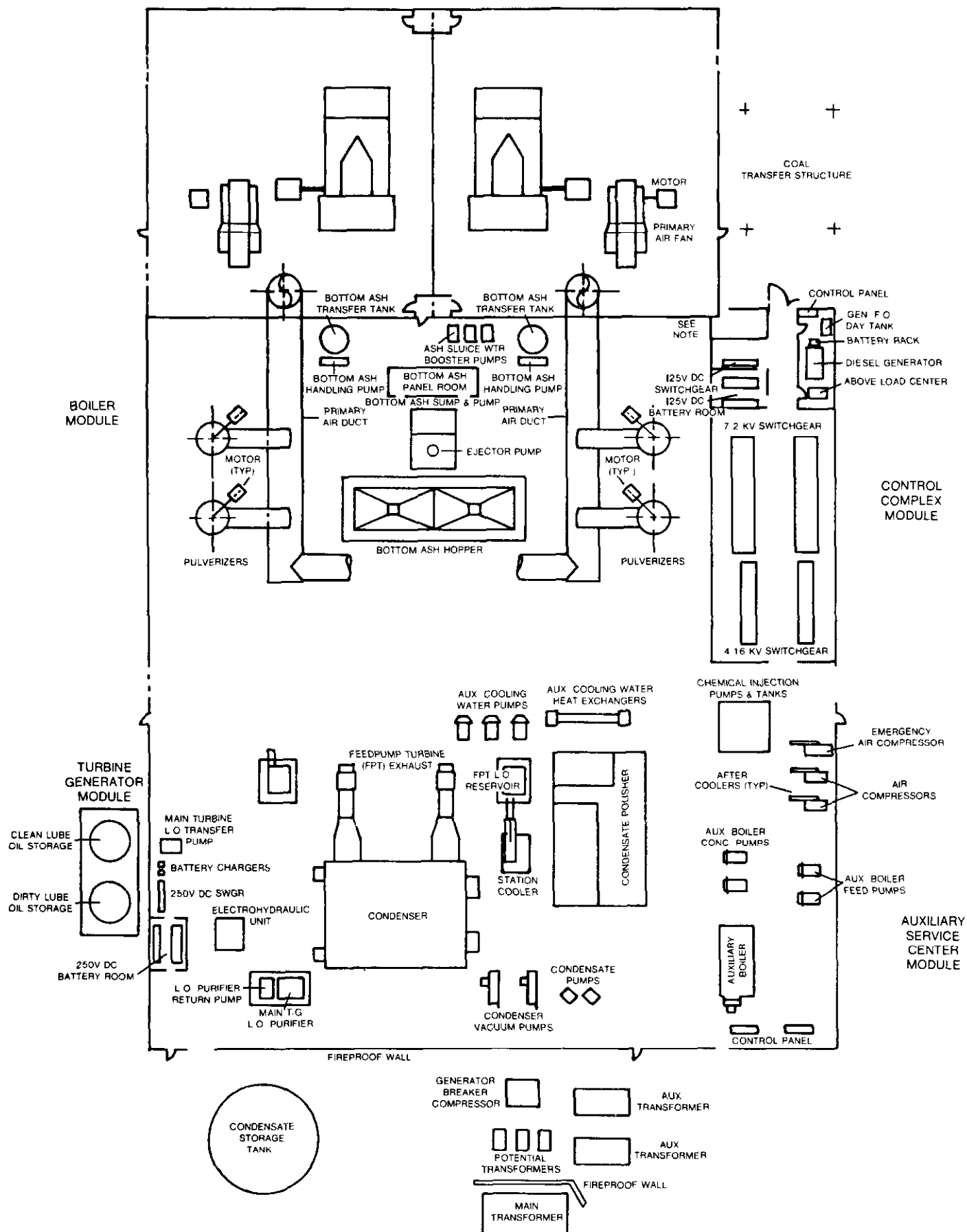


**Figure 3. 500 MWe Reference Plant Arrangement Plan Operating and Feeder Floor**



**Figure 3a. 250 MWe Reference Plant Arrangement Plan  
Operating and Feeder Floor**





**Figure 4a. 250 MWe Reference Plant Arrangement Plan  
Ground Floor**

TABLE 3  
Reference Plant Mechanical Equipment Data  
500 MWe Reference Plant

<u>Steam Generator</u>		<u>Condenser</u>	
Type	Balanced draft, direct fired, pulverized coal.	Shells Surface - (Ft <sup>2</sup> )	2 235,000
		<u>Feedwater Heaters</u>	
Main steam - (10 <sup>3</sup> lb/hr)	3,625	Number of stages	7 stages, 6 closed, 1 open
- (psig/°F)	2,520/1,005		
Reheat - (10 <sup>3</sup> lb/hr)	3,336		
- (°F)	1,005		
<u>Turbine Generator</u>		<u>Boiler Feedwater Pumps</u>	
Frame size, last stage blade	30"	Number/driver	2/turbine
Generator rating - (MVA/PF)	640/0.85	Total HP - (both)	17,455
Exhaust	2.0" HgA	Flow ea - (GPM/%)	5,000/50
Rated Capacity, Net/Gross(MW)	510/536	<u>Circulating Water</u>	
<u>Auxiliary Boiler</u>		Total flow - (GPM)	184,000
No./type/fuel	2/package/ No. 2 oil	Cooling source	Cooling Towers
Design rating - (10 <sup>3</sup> lb/hr)	100	Ambient temp./degree	60/30
		rise - (°F)	
- (psig/°F)	150/500	No. pumps/HP	2/2,500
<u>Fans</u>		<u>Precipitator</u>	
Forced draft - (No./driver)	2/motor	Type:	Electrostatic
Primary air - (No./driver)	2/motor	Emissions (lb/MM Btu)	0.10
Induced draft - (No./driver)	4/motor	Specific Collector	
		Area-(Ft <sup>2</sup> /1000 ASCFM)	200
<u>Coal-Handling Facilities</u>		<u>Main Power Transformers</u>	
Type	Rotary dump	Number/type (ea/No. phases)	4/1 (1-spare)
Unloading rate -(No.Belts/tph)	1/3,000	MVA/Temp Rise	640/65°F
Reclaiming rate - (No. belts/tph)	5/250	Voltage - kV/kV	24/345
<u>Ash-Handling Facilities</u>		<u>Switchyard</u>	
Bottom ash unloading - tph	8	Breakers - No.	6
Storage	Dewatering pond	Size - kV	345
Fly ash unloading - tph	31		
Storage	Silo		

TABLE 3A  
Reference Plant Mechanical Equipment Data  
250 MWe REFERENCE PLANT

<u>Steam Generator</u>		<u>Condenser</u>	
Type	Balanced draft, direct fired, pulverized coal.	Shells Surface - (Ft <sup>2</sup> )	2 117,500
		<u>Feedwater Heaters</u>	
Main steam - (10 <sup>3</sup> lb/hr)	1,813	Number of stages	7 stages,
- (psig/ <sup>0</sup> F)	2,520/1,005		6 closed,
Reheat - (10 <sup>3</sup> lb/hr)	1,668		1 open
- ( <sup>0</sup> F)	1,005		
<u>Turbine Generator</u>		<u>Boiler Feedwater Pumps</u>	
Frame size, last stage blade	21"	Number/driver	2/turbine
Generator rating - (MVA/PF)	320/0.85	Total HP - (both)	8,778
Exhaust	2.0" HgA	Flow ea - (GPM/%)	2,500/50
Rated Capacity, Net/Gross(MW)	255/268	<u>Circulating Water</u>	
<u>Auxiliary Boiler</u>		Total flow - (GPM)	92,000
No./type/fuel	1/package/ No. 2 oil	Cooling source	Cooling Towers
Design rating - (10 <sup>3</sup> lb/hr)	100	Ambient temp./degree	60/30
- (psig/ <sup>0</sup> F)	150/500	rise - ( <sup>0</sup> F)	
		No. pumps/HP	2/1,250
<u>Fans</u>		<u>Precipitator</u>	
Forced draft - (No./driver)	2/motor	Type:	Electrostatic
Primary air - (No./driver)	2/motor	Emissions (lb/MM Btu)	0.10
Induced draft - (No./driver)	2/motor	Specific Collector	
		Area-(Ft <sup>2</sup> /1000 ASCFM)	200
<u>Coal-Handling Facilities</u>		<u>Main Power Transformers</u>	
Type	Rotary dump	Number/type (ea/No. phases)	4/1 (1-spare)
Unloading rate -(No.Belts/ tph)	1/3,000	MVA/Temp Rise	320/65 <sup>0</sup> F
Reclaiming rate - (No. belts/tph)	3/200	Voltage - kV/kV	24/345
<u>Ash-Handling Facilities</u>		<u>Switchyard</u>	
Bottom ash unloading - tph	4	Breakers - No.	6
Storage	Dewatering pond	Size - kV	345
Fly ash unloading - tph	16		
Storage	Silo		

forced-circulation, balanced-draft, dry-bottom boiler designed for operation using pulverized coal with startup on light fuel oil. The enclosure of the boiler is designed with the water-cooled walls. The unit contains 24 [16] horizontally-opposed, wall-fired burners. Each burner's capacity is 200 [150] million Btu/hr. The plan area heat release rate (the amount of heat generated per square foot of boiler plan area at the upper fuel burner level) is 1.5 million Btu/hr.-ft<sup>2</sup>. The upper furnace gas residence time is 0.8 seconds.

Ducts between the air heater and the electrostatic precipitator (ESP) are sized for a gas velocity of 3,600 fpm. Gas residence time in this ductwork and the ESP manifold is 1.5 seconds. The reference plant stack is 718 [500] feet in height and consists of a concrete chimney with an acid brick liner.

Bays on either side of the boiler contain coal silos, feeders, and pulverizers. The remaining space is reserved for the boiler, combustion air ducts, and coal pipes. Space at the back of the boiler is reserved for the boiler-to-air heater duct transition and for the air preheaters above the fan room containing the forced draft and primary air fans.

Six [Four], 50 [40] tph coal pulverizers are on the ground floor, three [two] on each side of the boiler. Gravimetric-type coal feeders are on the feeder floor above the coal pulverizers. The coal silos are above the coal feeders. Each silo feeds one pulverizer. The coal conveyors are above the silos. A gallery housing the surge bin and the feed conveyors is located behind the boiler above the ducts in the duct transition bay.

The bottom ash hopper is on the ground floor under the boiler. The pulverizer reject-storage tank and transfer tanks are also on the ground floor, underneath the heat recovery section of the boiler. The economizer ash collection tank is located directly under the economizer hoppers. Bottom ash handling pumps, ash sluice water booster pumps, and ash sump pumps are on the ground floor near the ash storage and transfer tanks.

The following equipment is located within the water treatment module: domestic water treatment system, makeup demineralizer, raw water pretreatment system, wastewater treatment plant, offices and laboratory, and sewage treatment system.

The electrostatic precipitator (ESP) module contains all of the equipment necessary to operate the cold, rigid frame ESP. Particulate emissions are controlled to 0.10 lb/MMBtu.

### 2.1.2 Plant Performance Assumptions

Overall performance parameters for the reference power plant are given in Table 4. The net plant heat rate includes an allowance of 6 percent for plant auxiliaries. The addition of a clean coal technology may result in a change in the net plant electrical output due to the consumption or production of power and steam. Similarly, the reference plant availability factor of 65% may change as a result of retrofit/repowering due to changes in both plant reliability and scheduled maintenance periods. The reference power plant boiler is uncontrolled with regard to SO<sub>2</sub> and NO<sub>x</sub> emissions. It is assumed that 95 percent of the coal sulfur is converted to SO<sub>2</sub> resulting in emissions

of 3.8 lb. SO<sub>2</sub>/MM Btu. Conventional, wall-fired burners are utilized with no combustion modifications for NO<sub>x</sub> reduction. Total NO<sub>x</sub> emissions (as NO<sub>2</sub>) are 1.2 lb/MMBtu. A schematic of the flue gas flow through the boiler at full load design conditions is shown in Figure 5. Ash flow rates are shown in Table 5. In Table 6, flue gas compositions are given at two different locations in the boiler ductwork. The molecular weight of the flue gas is 29.7.

TABLE 4

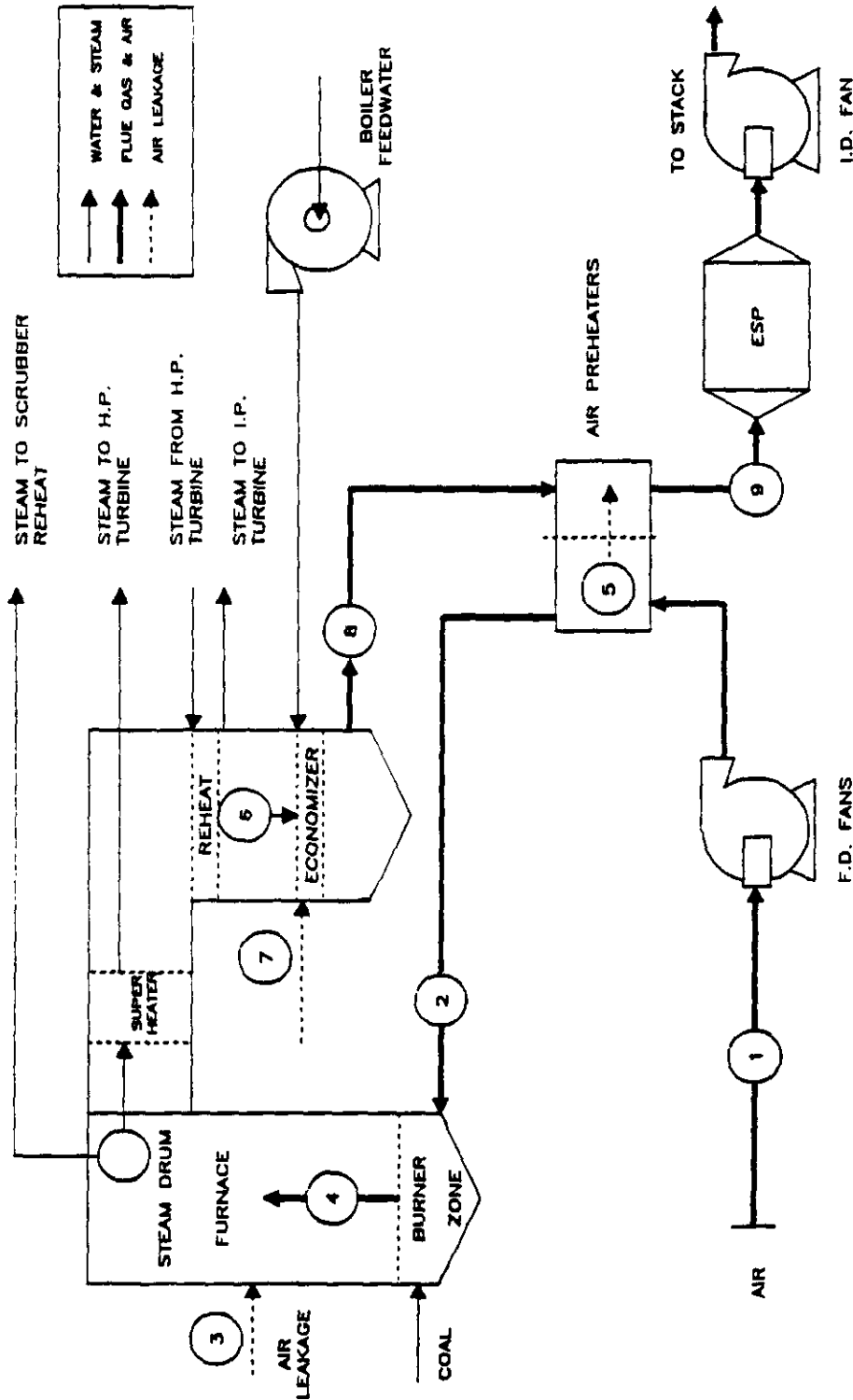
## Reference Power Plant Performance Parameters

Steam Cycle Heat Rate, Btu/kWh	7,914 Btu/kWh
Boiler Efficiency, %	87.7%
Gross Heat Rate, Btu/kWh	9,024 Btu/kWh
Net Heat Rate, Btu/kWh	9,493 Btu/kWh
Coal Burn Rate, tph	196 [98]tph
Net Output, MWe	509.5 [254.8] MWe
Plant Availability Factor, %	75%

TABLE 5

## Reference Power Plant Ash Flow Rates (Dry Basis)

	Tons Per Hour
Furnace Bottom Ash	6.3 [3.2]
Economizer Ash	2.4 [1.2]
Mill Rejects (Pyrites)	0.2 [0.2]
Fly Ash	22.9 [11.4]
Total	32.0 [16.0]



STREAM NO.	1	2	3	4	5	6	7	8	9
TEMP., °F	80	550	80	1800	80	1050	80	725	304
PRESSURE, In. WG	0.0	+0.6	0.0	-0.1	0.0	-5.0	0.0	-8.5	-11.5
MSCFM	998	917	19	975	81	995	15	1010	1091
MACFM	1036	1781	20	4242	84	2889	16	2302	1603
% OXYGEN; by volume	21	21	21	2.7	21	3.1	21	3.2	4.5
% EXCESS AIR	26	16	---	16	---	19	---	20	30
SOLIDS, klb/hr	---	---	---	51.4	---	51.4	---	46.3	46.3

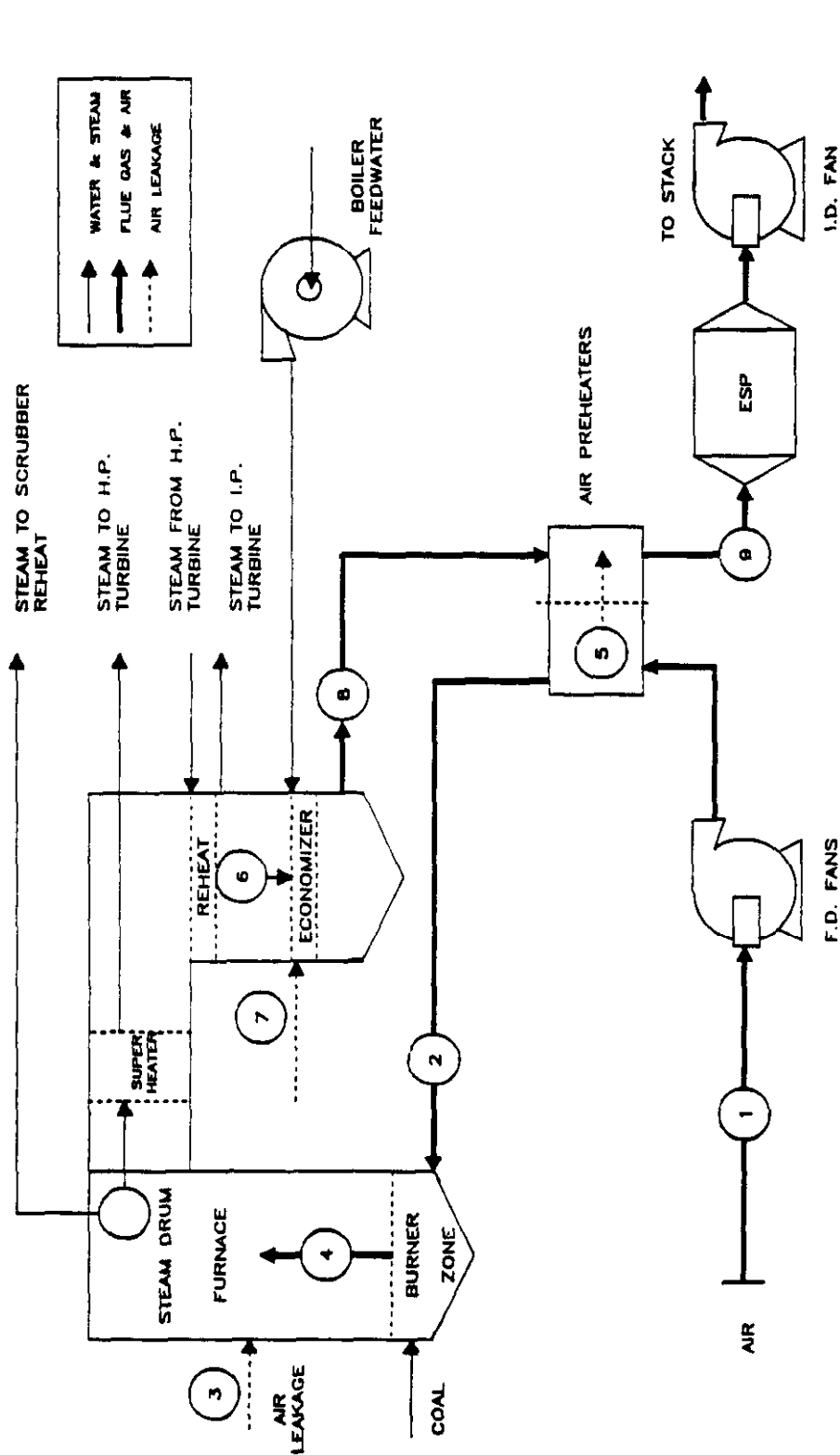
Standard Conditions

60 °F, 14.69 PSIA

Ambient Conditions

14.4 PSIA  
60% R.H.  
(0.013 lb H<sub>2</sub>O/lb Dry Air)

Figure 5. Schematic Flow Sheet of Nominal 500 MW Reference Plant



STREAM NO.	1	2	3	4	5	6	7	8	9
TEMP., °F	80	550	80	1800	80	1050	80	725	304
PRESSURE, in. WG	0.0	+0.6	0.0	-0.1	0.0	-5.0	0.0	-8.5	-11.5
MSCFM	499	459	10	488	41	498	7.5	505	546
MACFM	518	891	11	2121	42	1445	8	1151	802
% OXYGEN; by volume	21	21	21	2.7	21	3.1	21	3.2	4.5
% EXCESS AIR	26	16	--	16	--	19	--	20	30
SOLIDS, klb/hr	--	--	--	25.7	--	25.7	--	23.2	23.2

#### Standard Conditions

60 °F, 14.69 PSIA

#### Ambient Conditions

14.4 PSIA  
80% R.H.  
(0.013 lb H<sub>2</sub>O/lb Dry Air)

Figure 5a. Schematic Flow Sheet of Nominal 250 MW Reference Plant

TABLE 6  
Reference Power Plant  
Flue Gas Composition

	At Economizer Outlet			At Air Heater Outlet		
	% - Volume	lb/hr		% - Volume	lb/hr	
O <sub>2</sub>	3.2	166,000	[ 83,000]	4.5	250,200	[ 125,100]
CO <sub>2</sub>	13.8	970,200	[485,100]	12.8	970,200	[ 485,100]
H <sub>2</sub> O	8.0	230,600	[115,300]	7.6	235,300	[ 117,650]
N <sub>2</sub>	74.7	3,339,900	[1,669,950]	74.9	3,618,300	[1,809,150]
	PPM	lb/hr		PPM	lb/hr	
SO <sub>2</sub>	1,803	18,400	[9,200]	1,669	18,400	[9,200]
SO <sub>3</sub>	19	245	[ 123]	18	245	[ 123]
HCl	67	392	[ 196]	62	392	[ 196]
NO	752	3,600	[1,800]	696	3,600	[1,800]
NO <sub>2</sub>	40	291	[ 146]	37	291	[ 146]
Total		4,729,660	[2,364,830]		5,096,980	[2,548,490]

## 2.2 General Description of Reference Coal Processing Plant Specifications

The unique feature of technologies that perform coal processing (e.g., coal cleaning and coal liquefaction) is the lack of need for the coal processing plant scale to be consistent with that of the power plant. Indeed, economics usually dictate that one coal processing plant serve multiple power plants (and sometimes even other markets). As a consequence of the scale inconsistency, the commercialized version of a proposed remote coal processing approach is given to be a new, 750 tph input, proposer defined, base case, coal processing plant. It is assumed that there is an adequate market for the entire output of the coal processing plant, even though only a portion of its output is utilized by the base case power plant. The power plant may buy as much fuel as it needs (up to the total output of the processing plant) at the product fuel cost. Consequently, DOE requests that the proposer define a configuration and develop cost and performance data for a 750 ton per hour processing plant (i.e., not a modification of an existing plant). This plant is to be located in the same general geographic location as the reference power plant and site conditions are as specified in Table 1. The reference coal data is provided in Table 2 above.

The total facility to be defined by the proposer should produce a coal-derived fuel suitable for combustion in the reference power plant boiler without further treatment. Land requirements should be estimated for the coal processing facility and the cost of the land should be included with the capital costs.

Proposers whose product fuel cannot be directly fired in the reference power plant, must consider the additional costs that will be incurred in converting the power plant to use their fuel. Examples of such fuel forms could include coal-water slurries and liquid hydrocarbons. Power plant modifications could

include 60-day storage facilities, necessary transfer equipment and modifications to the boiler, as required. These costs are to be computed only as applicable to the reference 500 [250] MWe power plant described in Section 2.1.

### 2.2.1 Coal Washability Data

The analysis of the reference, freshly-mined coal (non-oxidized) is documented in Table 2. Chemical analyses as a function of coal size is provided in Table 7 and detailed washability data is provided in Tables 8, 9, and 9A.

## 3. TECHNOLOGY CLASSIFICATION

DOE recognizes that many different types of technologies and combinations of technologies can be applied to reduce the acid rain precursor emissions from existing power generation facilities. In order to facilitate the evaluation process, DOE divides clean coal technologies into two classifications: retrofit technologies and repowering technologies.

### 3.1 Retrofit Technologies

Retrofit technologies add emission control equipment to existing plants but do not result in additional capacity nor do they extend boiler life.

A special subset of the retrofit technologies consists of a remotely located (away from the power plant site) coal "processing" plant. The most common example of this is the coal beneficiation plant; however, coal liquifaction and other approaches pose similar situations. Figure 6 illustrates and provides examples of the retrofit technologies.

TABLE 7  
SIZE AND CHEMICAL ANALYSES OF A SIMULATED UPPER FREEPORT  
COALBED CRUSHED TO 1-1/2 INCH AND 3/8 INCH TOPSIZES

(INCH/MESH)	DIRECT ANALYSIS				CUMULATIVE ANALYSIS					
	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)
1 1/2 INCH X 0										
1 1/2 X 3/4	19.0	24.7	2.49	1.59	11135	19.0	24.7	2.49	1.59	11135
3/4 X 3/8	25.1	16.6	2.51	1.50	12459	44.1	20.1	2.50	1.54	11889
3/8 X 28	43.7	13.6	2.51	1.48	12981	87.8	16.9	2.51	1.51	12433
28 X 100	7.6	12.5	2.38	1.36	13194	95.4	16.5	2.50	1.50	12493
-100	4.6	14.2	2.49	1.95	12769	100.0	16.4	2.50	1.52	12506
3/8 INCH X 0										
3/8 X 14	62.4	18.4	2.56	1.58	12265	62.4	18.4	2.56	1.58	12265
14 X 28	13.8	13.0	2.38	1.34	13148	76.2	17.4	2.53	1.54	12425
28 X 100	15.2	11.8	2.36	1.32	13360	91.4	16.5	2.50	1.50	12580
-100	8.6	14.1	2.34	1.85	12787	100.0	16.3	2.49	1.53	12598

TABLE 8  
DETAILED WASHABILITY ANALYSES OF A SIMULATED UPPER FREEPORT  
COALBED CRUSHED TO A 1 1/2 INCH TOP SIZE

SPECIFIC GRAVITY	DIRECT ANALYSIS				CUMULATIVE ANALYSIS					
	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)
						1-1/2 INCH X 3/4 INCH (19.9% OF 1-1/2 INCH X 100 MESH)				
FLOAT - 1.30	25.0	5.4	1.75	0.60	14376	25.0	5.4	1.75	0.60	14376
1.30 - 1.35	16.1	9.1	2.13	1.03	13693	41.1	6.8	1.90	0.77	14108
1.35 - 1.40	14.9	14.9	2.18	1.14	12644	56.0	9.0	1.97	0.87	13719
1.40 - 1.50	11.9	24.1	2.91	1.94	11032	67.9	11.6	2.14	1.06	13248
1.50 - 1.60	5.2	32.2	2.94	2.05	9666	73.1	13.1	2.19	1.13	12993
1.60 - 1.90	12.2	35.3	2.89	2.20	9157	85.3	16.3	2.29	1.28	12444
1.90 - 2.20	1.2	42.9	6.30	5.73	7939	86.5	16.6	2.35	1.34	12382
SINK - 2.20	13.5	76.0	3.39	3.15	3145	100.0	24.7	2.49	1.59	11135
						3/4 INCH X 3/8 INCH (26.3% OF 1-1/2 INCH X 100 MESH)				
FLOAT - 1.30	37.9	4.5	1.67	0.52	14543	37.9	4.5	1.67	0.52	14543
1.30 - 1.35	22.2	9.4	1.95	0.85	13638	60.1	6.3	1.77	0.64	14209
1.35 - 1.40	13.4	14.6	2.61	1.57	12698	73.5	7.8	1.93	0.81	13933
1.40 - 1.50	9.1	23.6	3.47	2.50	11118	82.6	9.6	2.10	1.00	13623
1.50 - 1.60	2.9	30.4	4.10	3.21	9966	85.5	10.3	2.16	1.07	13499
1.60 - 1.90	6.4	36.9	3.95	3.26	8897	91.9	12.1	2.29	1.22	13179
1.90 - 2.20	1.3	40.0	6.63	6.06	8399	93.2	12.5	2.35	1.29	13112
SINK - 2.20	6.8	73.3	4.66	4.42	3505	100.0	16.6	2.51	1.50	12459

TABLE 8 (CONTINUED)

DETAILED WASHABILITY ANALYSES OF A SIMULATED UPPER FREEPORT  
COALBED CRUSHED TO A 1 1/2 INCH TOP SIZE

[illegible]

TABLE 8 (CONTINUED)  
DETAILED WASHABILITY ANALYSES OF A SIMULATED UPPER FREEPORT  
COALBED CRUSHED TO A 1 1/2 INCH TOP SIZE

SPECIFIC GRAVITY	DIRECT ANALYSIS				CUMULATIVE ANALYSIS					
	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)
1-1/2 INCH X 0 (100.0% of TOTAL 1-1/2 INCH X 0)										
FLOAT - 1.30	43.3	4.3	1.55	0.40	14574	43.3	4.3	1.55	0.40	14574
1.30 - 1.35	18.6	9.2	1.89	0.79	13674	61.9	5.8	1.65	0.51	14304
1.35 - 1.40	11.2	14.3	2.43	1.39	12749	73.1	7.1	1.77	0.65	14065
1.40 - 1.50	8.1	22.9	3.36	2.39	11226	81.2	8.7	1.93	0.82	13783
1.50 - 1.60	3.2	30.0	3.85	2.96	10036	84.4	9.5	2.00	0.90	13639
1.60 - 1.90	6.4	36.2	4.25	3.56	9003	90.9	11.4	2.16	1.09	13311
1.90 - 2.20	1.3	40.2	6.93	6.36	8360	92.2	11.8	2.23	1.17	13241
SINK - 2.20	7.8	72.0	5.65	5.41	3695	100.0	16.5	2.50	1.50	12493
MINUS 100 MESH	4.6	14.2	2.49	1.95	12769	100.0*	16.4*	2.49*	1.52*	12506*

\* These are cumulative values for the FLOAT-SINK Plus the Minus 100 MESH.

TABLE 9  
DETAILED WASHABILITY ANALYSES OF A SIMULATED UPPER FREEPORT  
COALBED CRUSHED TO A 3/8 INCH TOP SIZE

SPECIFIC GRAVITY	DIRECT ANALYSIS				CUMULATIVE ANALYSIS					
	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)
3/8 INCH X 14 MESH (68.3% of 3/8 INCH X 100 MESH)										
FLOAT - 1.30	42.1	4.3	1.54	0.38	14581	42.1	4.3	1.54	0.38	14581
1.30 - 1.35	18.8	8.5	1.83	0.73	13803	60.9	5.6	1.63	0.49	14341
1.35 - 1.40	9.6	12.6	2.22	1.19	13057	70.5	6.6	1.71	0.58	14166
1.40 - 1.50	7.4	19.0	2.71	1.74	11918	77.9	7.7	1.80	0.69	13952
1.50 - 1.60	3.3	20.9	3.52	2.65	11585	81.2	8.3	1.87	0.77	13856
1.60 - 1.90	7.5	30.4	4.42	3.74	9966	88.7	10.2	2.09	1.02	13527
1.90 - 2.20	1.7	34.8	5.46	4.90	9239	90.4	10.6	2.15	1.10	13447
SINK - 2.20	9.6	91.9	6.38	6.09	1139	100.0	18.4	2.56	1.58	12265
14 MESH X 28 MESH (15.1% of 3/8 INCH X 100 MESH)										
FLOAT - 1.30	57.3	3.2	1.46	0.30	14786	57.3	3.2	1.46	0.30	14786
1.30 - 1.35	15.6	8.5	1.75	0.65	13803	72.9	4.3	1.52	0.37	14576
1.35 - 1.40	6.9	12.3	2.36	1.33	13111	79.8	5.0	1.59	0.46	14449
1.40 - 1.50	5.0	17.3	2.71	1.74	12217	84.8	5.7	1.66	0.53	14317
1.50 - 1.60	2.7	18.8	3.97	3.10	11953	87.5	6.1	1.73	0.61	14244
1.60 - 1.90	3.5	24.8	4.53	3.85	10912	91.0	6.8	1.84	0.74	14116
1.90 - 2.20	1.6	31.4	6.34	5.78	9799	92.6	7.3	1.92	0.82	14042
SINK - 2.20	7.4	85.2	8.13	7.84	1961	100.0	13.0	2.38	1.34	13148

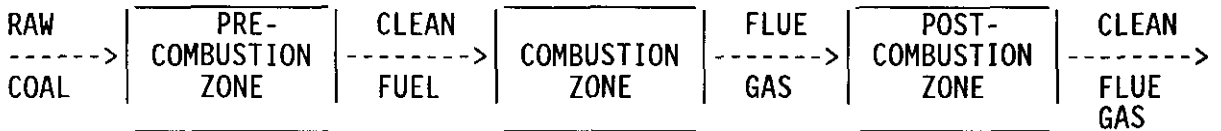
TABLE 9 (CONTINUED)  
DETAILED WASHABILITY ANALYSES OF A SIMULATED UPPER FREEPORT  
COALBED CRUSHED TO A 3/8 INCH TOP SIZE

SPECIFIC GRAVITY	DIRECT ANALYSIS				CUMULATIVE ANALYSIS			
	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)	WEIGHT (%)	ASH (%)	TOTAL SULFUR (%)	PYRITIC SULFUR (%)
				VALUE (BTU/LB)				VALUE (BTU/LB)
28 MESH X 100 MESH (16.6% of 3/8 INCH X 100 MESH)								
FLOAT - 1.30	61.9	2.9	1.41	14843	61.9	2.9	1.41	0.25
1.30 - 1.35	11.3	7.5	1.65	13987	73.2	3.6	1.45	0.30
1.35 - 1.40	6.6	11.3	1.48	13292	79.8	4.2	1.45	0.31
1.40 - 1.50	5.0	17.0	3.60	12270	84.8	5.0	1.58	0.45
1.50 - 1.60	2.8	17.1	3.43	12253	87.6	5.4	1.64	0.51
1.60 - 1.90	3.7	22.1	4.03	11377	91.3	6.1	1.73	0.63
1.90 - 2.20	1.8	31.3	4.97	9816	93.1	6.5	1.80	0.70
SINK - 2.20	6.9	82.3	9.96	2327	100.0	11.8	2.36	1.32
3/8 INCH X 0 (100.0% of TOTAL 3/8 INCH X 0)								
FLOAT - 1.30	47.7	3.8	1.50	14675	47.7	3.8	1.50	0.34
1.30 - 1.35	17.1	8.4	1.80	13823	64.8	5.0	1.58	0.43
1.35 - 1.40	8.7	12.4	2.14	13093	73.4	5.9	1.64	0.51
1.40 - 1.50	6.6	18.6	2.82	11996	80.1	6.9	1.74	0.62
1.50 - 1.60	3.1	20.0	3.57	11732	83.2	7.4	1.81	0.70
1.60 - 1.90	6.3	29.1	4.39	10184	89.5	8.9	1.99	0.91
1.90 - 2.20	1.7	33.7	5.50	9420	91.2	9.4	2.06	0.99
SINK - 2.20	8.8	89.8	7.07	1397	100.0	16.5	2.50	1.50
MINUS 100 MESH	8.6	14.1	2.34	12787	100.0*	16.3*	2.49*	1.53*

\* These are cumulative values for the FLOAT-SINK plus the Minus 100 MESH

TABLE 9A  
DETAILED WASHABILITY ANALYSES OF A SIMULATED UPPER FREEPORT  
COALBED CRUSHED TO A 28 AND 200 MESH TOP SIZES

DIRECT ANALYSIS						CUMULATIVE ANALYSIS						
SPECIFIC GRAVITY	WEIGHT (%)	ASH (%)	TOTAL		PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)	WEIGHT (%)	ASH (%)	TOTAL		PYRITIC SULFUR (%)	CALORIFIC VALUE (BTU/LB)
			SULFUR (%)	(%)					SULFUR (%)	(%)		
28 MESH X 0 (100.0% of TOTAL 28 MESH X 0)												
FLOAT - 1.27	51.7	3.7	1.42	0.27	14693	51.7	3.7	1.42	0.27	14693		
- 1.30	13.9	8.8	1.66	0.57	13748	65.6	4.8	1.47	0.33	14493		
- 1.40	15.6	17.2	2.13	1.14	12235	81.2	7.2	1.60	0.49	14059		
- 1.60	9.0	38.6	3.52	2.78	8623	90.2	10.3	1.79	0.72	13517		
- 1.80	2.8	56.9	5.47	4.95	5810	93.0	11.7	1.90	0.84	13285		
SINK - 1.80	7.0	80.1	10.41	10.17	2610	100.0	16.5	2.50	1.50	12537		
200 MESH X 0 (100.0% of TOTAL 200 MESH X 0)												
FLOAT - 1.27	50.7	3.1	1.36	0.20	14805	50.7	3.1	1.36	0.20	14805		
- 1.30	2.8	5.6	1.48	0.35	14338	53.5	3.2	1.37	0.21	14781		
- 1.40	16.8	7.5	1.58	0.47	13987	70.3	4.2	1.42	0.27	14591		
- 1.60	14.8	15.6	2.13	1.12	12519	85.1	6.2	1.54	0.42	14231		
- 1.80	4.1	33.1	3.05	2.25	9518	89.2	7.4	1.61	0.50	14014		
SINK - 1.80	10.8	91.5	9.83	9.73	1187	100.0	16.5	2.50	1.50	12629		



Physical Cleaning  
Chemical Cleaning  
Biological Cleaning  
Liquefaction  
Beneficiated CWS  
Gasifier Refueling

Advanced Combustor  
Low NO<sub>x</sub> Burners  
Furnace Sorbent  
Injection  
Gas Reburning

Duct-Injection  
Wet FGD  
SCR  
Combined NO<sub>x</sub>/SO<sub>x</sub> FGT  
FGD Enhancements  
Spray Drying

FIGURE 6. Definition of Retrofit Technology Categories

Retrofitting requires no specific levels of SO<sub>2</sub> and NO<sub>x</sub> control for a technology (or system of technologies), but presumes that the level of reduction will typically equal or exceed 50 percent. The proposer should develop a design which is believed to represent the technology's most cost-effective or competitive emission control level. For example, if the incremental costs for a given technology significantly increase at a 90 percent control level, then the offeror should not feel required to achieve 90 percent removal when the technology is more cost effective at 80 percent removal.

### 3.2 Repowering Technologies

Repowering involves replacing an existing plant's aging boiler with new, fluidized-bed combustion, gasification, or other technology. A repowered coal-fired plant would retain much of its steam cycle and virtually all of its electrical generating and power conditioning hardware. However, these components would be refurbished simultaneously with the repowering and result in increased plant life. Repowering technologies include atmospheric fluidized-bed combustion (AFBC), pressurized fluidized-bed combustion (PFBC), integrated gasification combined-cycle (IGCC), and other repowering configurations. Repowering improves emission control and can improve plant operability. Repowering configurations involving combined gas and steam turbine systems typically also increase the plant's electrical generation capacity and efficiency.

## 4. INSTRUCTIONS FOR COMPLETING WORKSHEETS

Worksheets are provided by DOE to obtain descriptive information and cost data from the proposers for their technologies. This section provides the guidance and instructions for completing the blank worksheets.

The number and kind of worksheets that each proposer must complete depends on the type of clean coal technology being proposed. In this regard, all proposals are considered to fall in one of four categories as follows:

o On-site Retrofit:

Refers to retrofit technologies applied to the reference power plant.

o Repowering

Refers to repowering technologies applied to the reference power plant.

o Coal Processing

Refers to coal processing technologies such as coal cleaning that are conducted remote from the reference power plant site.

o Coal Processing with On-site Retrofit / Repowering

Refers to a combination of technologies applied both remote from, and on the reference power plant site. Technologies applied at both sites must result in reductions of SO<sub>2</sub> and/or NO<sub>x</sub> emissions, for example coal cleaning with duct injection of sorbent.

Table 10 below lists all the worksheets contained in this Appendix. It also indicates the number of each worksheet that a proposer must complete according to category of proposed technology. The number "1" entered in Table 10 means that a particular worksheet must be completed once, either for the reference power plant or for the 750 tph coal processing plant. The number "2" entered in the Table means that the particular worksheet must be filled out twice, once for the plant on each site. A blank space indicates the worksheet is not required.

Proposers of repowering or retrofit technologies applied at the power plant site must complete a Worksheet 3 for each major plant section in which new equipment is installed. Proposers of coal processing technologies must complete a Worksheet 3 for each major section of the new 750 tph plant. See Worksheet 4C for a suggested organization of the coal processing plant's major sections.

TABLE 10

## WORKSHEET REQUIREMENTS BY TECHNOLOGY CATEGORY

	<u>WORKSHEET NUMBER/TITLE</u>	<u>ON-SITE</u>				<u>COAL</u>		<u>COAL PROCESSING WITH ON-SITE RETROFIT/REPOWERING</u>
		<u>RETROFIT</u>	<u>RETROFIT</u>	<u>REPOWERING</u>	<u>REPOWERING</u>	<u>PROCESSING</u>	<u>PROCESSING</u>	
1A	General Description of Retrofit and Repowering Technologies	1		1		---		1
1B	General Description of Coal Processing Plant	---		---		1		1
2	Block Flow Diagram	1		1		1		2
3	Description of Major Plant Sections	Variable	Variable	Variable	Variable	Variable	Variable	Variable: both plants
4A	Equipment Costs for Retrofitted Power Plant	1		---		---		1
4B	Equipment Costs for Repowered Power Plant	---		1		---		1
4C	Costs for New 750 tph Remote Coal Processing Plant	---		---		1		1
5	Variable Operating Costs for Power Plant	1		1		---		1
6	Power Plant Annual Fixed O&M Costs	1		1		---		1
7	Power Plant Capital Requirement Summary	1		1		---		1
8	Technology Application Boundaries and Performance	1, Part I	1, Part I	1, Part I	1, Part I	1, Part II	1, Parts I and II	
9A	Summary of Costs for Power Plant Boundary Applications	1		1		---		1
9B	Summary of Costs for Coal Processing Plant Boundary Applications	---		---		1		1
10A	Sensitivity Data for Power Plant Commodities and Effluents	1		1		---		1
10B	Sensitivity Data for Coal Processing Plant Commodities and Effluents	---		---		1		1

#### 4.1 Worksheet 1 General Description of Clean Coal Project

Worksheet 1A requests a general description of a mature, fully-commercial version of the proposed retrofit or repowering technology as applied to the reference power plant. Worksheet 1B requests similar information for a coal processing plant and is applicable only if the proposed technology involves the pre-combustion treatment of coal at a site remote from the power plant. These worksheets provide descriptions of the "base case."

#### 4.2 Worksheet 2: Block Flow Diagram (Showing Major Plant Sections)

On Worksheet 2, block flow diagrams describing the major plant sections in the "as modified" power plant and/or the major plant sections of the new coal processing plant, as applicable, are to be provided. At a minimum, the flow diagrams should describe the interconnections of the major sections in the plant, flow rates of major feed and effluent streams from the plant, as well as temperatures and pressures of major streams between blocks. A set of plant section definitions for the block flow diagrams should be selected, as applicable, from Tables 11 through 14. Within a table of section definitions, only those sections relevant to the proposed technology are to be utilized. Table 11 applies to retrofit technologies and off-site processing of coal. In the event a technology applicable to a remote site coal processing plant is proposed, two versions of Worksheet 2 are to be completed (i.e., one for the coal processing plant and one to reflect any effects on, or modifications to, the power plant). Tables 12, 13, and 14 apply to, respectively, PFBC repowering, AFBC repowering, and IGCC repowering. If a repowering technology not addressed in Tables 12, 13, or 14 is proposed, the proposer shall complete Worksheet 2 for the proposed technology, providing information at a level of detail similar to that listed in Tables 12 through 14.

TABLE 11

#### List of Major Sections in Retrofitted and/or Coal Processing Plant

Section	Definition
100	Non-Coal Feed and Handling
200	Coal Preparation and Storage
210	Coal Receiving and Storage (coal preparation only)
220	Dense Media Recovery and Ash Conveyor (coal preparation only)
230	Coal Screening (coal preparation only)
240	Coarse Coal Separation (coal preparation only)
250	Fine Coal Separation (coal preparation only)
260	Intermediate Coal Separation (coal preparation only)
270	Dewatering and Drying (coal preparation only)
280	Clean Coal Storage and Handling (coal preparation only)
300	Fuel and Oxidant Feed and Handling
400	Combustion/Steam Generation
500	Fuel Gas Processing and Handling
600	Power Generation
700	SO <sub>2</sub> Removal Unit
800	NO <sub>x</sub> Removal Unit

Table 11 (Continued)

900	Particulate Removal
1000	Flue Gas Ducting and Fans
1100	Sorbent Regeneration
1200	By-Product Processing and Handling
1300	Chimney or Stack
1400	Waste Handling
1500	Balance of Plant

TABLE 12

## List of Major Plant Sections in PFBC Repowering

Section	Definition
100	Solids Receiving, Drying, Grinding, and Slurrying
200	PFBC Steam Generator
300	High-Temperature Particulate Removal
400	Gas Turbine(s)/Generator
500	Steam Turbine(s)/Generator
600	Electrical Power Plant (switchgear, transformers, controls, distribution panels)
700	Post Gas Turbine Heat Recovery
800	Post Gas Turbine Particulate Removal
900	Solid Waste Handling
1000	Balance of Plant (control and office buildings, machine shop, warehouse and garages, auxiliary boilers and diesel building, waste treatment structures, stack, hot gas piping, interconnecting duct work, fans, supports, foundations, fuel oil system, plant air system, fire protection, general plant equipment)

TABLE 13

## List of Major Plant Sections in AFBC Repowering

Section	Definition
100	Solids Receiving, Drying, Grinding, and Slurrying
200	AFBC Steam Generator
300	Steam Turbine(s)/Generator
400	Electrical Power Plant (switchgear, transformers, controls, distribution panels)
500	Particulate Removal
600	Solid Waste Handling
700	Balance of Plant (control and office buildings, machine shop, warehouse and garages, auxiliary boilers and diesel building, waste treatment structures, stack, hot gas piping, interconnecting duct work, fans, supports, foundations, fuel oil system, plant air system, fire protection, general plant equipment)

TABLE 14

## List of Major Plant Sections in IGCC Repowering

Section	Definition
100	Solids Receiving, Drying, Grinding, and Slurrying
200	Oxygen Plant
300	Coal Gasification Including Pressurized Fuel System and Ash Removal
400	Gas Stream Heat Recovery
500	Gas Stream Particulate Removal
600	Gas Stream Desulfurization
700	Gas Turbine(s)/Generator
800	Steam Turbine(s)/Generator
900	Booster Compressor
1000	Wastewater Treatment
1100	Solid Waste Handling
1200	Balance of Plant (switchgear, transformers, controls, distribution panels, control and office buildings, machine shop, warehouse and garages, auxiliary boilers and diesel building, waste treatment structures, stack, hot gas piping, interconnecting duct work, fans, supports, foundations, fuel oil system, plant air system, fire protection, general plant mechanical and electrical equipment).

#### 4.3 Worksheet 3: Description of Major Plant Sections in Block Flow Diagrams on Worksheet 2

On Worksheet 3, information is to be provided for each of the plant sections shown on Worksheet 2 which would be modified or added to the plant as part of the proposed clean coal technology. A separate copy of Worksheet 3 is to be used for each section. Where applicable, the following information is to be provided: (a) section name; (b) process description documenting the process chemistry and reaction conditions associated with major unit operations (e.g., flue gas treatment or PFBC) or the key mechanical operation parameters (e.g., physical coal cleaning) within the section; (c) key process design criteria such as reagent/consumable stoichiometries, process residence time data, and replacement equipment size (e.g., replacement burner capacity); (d) description of process sequence; and (e) existing equipment modifications required to implement the clean coal technology. (If this information is included in the main text of the proposal, a cross-reference to the information can be provided.)

#### 4.4 Worksheet 4: Equipment Costs for Installing Clean Coal Technology

On Worksheet 4, information on the costs for installing the clean coal technology equipment is to be provided. The equipment costs developed on Worksheets 4A and 4B exclude project contingencies, engineering and home office fees, allowance for funds used during construction (AFDC) and price escalation, startup and working capital, and initial catalyst and chemical costs. These costs are considered in Worksheet 7. In the event a coal processing technology (consistent with the large remote processing plan

concept) is proposed, then costs are to be defined for a new, 750 tph, remote, coal processing plant; the costs are to be documented using Worksheet 4C. The amount of the fuel produced by this plant which is utilized by the power plant (in tons/hr) will be an input to Worksheet 5. If the fuel form is different than the reference coal or comes from a coal processing plant (as discussed in the foregoing), the proposer must include the cost of any power plant modifications required to permit efficient combustion of the fuel on Worksheets 4A or 4B, as applicable. Methodology and assumptions used in developing the costs can be provided by the proposer as an addendum to Worksheet 4, if desired. Directions for filling in each of the columns on Worksheet 4A and 4B to calculate capital costs are given immediately below. Worksheet 4A applies to retrofit technologies and Worksheet 4B applies to repowering technologies.

Column 1 -- For the retrofit technologies, this column of worksheet 4A is already filled out. For the repowering technologies, plant section numbers are to be listed in Column 1 of Worksheet 4B; numbers should correspond to section numbers used in one of Tables 12 through 14, as applicable. Plant modification costs not included with any other plant section costs should be included as a separate line item.

Column 2 -- For the retrofit technologies this column of worksheet 4A is already filled out. For the repowering technologies, plant section titles for Worksheet 4B should correspond to the titles used in one of Tables 12 through 14, as applicable.

Column 3 -- For retrofit technologies, the costs on Worksheet 4A shown in Column 3 should be for installation of the incremental equipment and any required modification or refurbishment of existing equipment in the reference power plant but costed as if the work was done in an entirely new, grass roots plant of the capacity shown in Worksheets 1A and 2. For repowering technologies, the costs on Worksheet 4B should be the total costs by section for building an entirely new plant of the capacity shown in Worksheets 1A and 2. (Note: the adjustments to the Column 3 values in Worksheet 4A or 4B to account for the use of existing equipment and construction activities in an existing plant are made using the factors provided in other columns as discussed below.) For each plant section, the costs given in Column 3 should include both direct field material and labor costs, as well as the civil engineering, structural, and architectural costs associated with the plant section. Since it is to be assumed this data is applicable to the Nth plant, any economies due to factors such as design standardization, modularization, etc. should be utilized in estimating these costs. Vendor price quotes, cost data from previous design studies of a similar size and scope, or existing literature data can be used to establish the installed cost of each plant section.

The cost reporting basis for the worksheets is 1986 dollars. All costs, including those on Worksheet 4, should be adjusted to 1986 dollars using the appropriate process plant cost index factor obtained from Table 15 and the equation shown below.

$$\text{Cost data in 1986 base-year} = \text{Cost data in other year} \times \frac{318.4}{\text{Cost factor in other year}}$$

TABLE 15

## Process Plant Cost Index Factors

Annual Index	Cost Factor	Annual Index	Cost Factor
1970	125.7	1979	238.7
1971	132.2	1980	261.2
1972	137.2	1981	297.0
1973	144.1	1982	314.0
1974	165.4	1983	316.9
1975	182.4	1984	322.7
1976	192.1	1985	325.3
1977	204.1	1986	318.4
1978	218.8		

Column 4 -- The development status of a technology is likely to impact its ultimate commercialized cost. In order to quantify uncertainty in the design and project cost of commercial-scale equipment, a process development contingency factor is applied to each major plant section. Table 16 provides guidelines for selecting process development contingency factors for each plant section based on the level of development of the technology used within that section. Appropriate factors are to be listed in Column 4 of Worksheet 4A or 4B.

Column 5 -- The equipment utilization factor appears only on Worksheet 4B and is applicable only to repowering technologies. It is a capital cost multiplier which only reflects the fraction (on a cost basis) of the plant section's equipment needs which must be satisfied by new equipment. It will have values between 0.0 and 1.0. This factor is much less than 1.0 where a significant fraction of the existing equipment can be utilized (e.g., the steam turbine/generator section). This factor would equal zero if all of the modified plant section's equipment needs were satisfied by existing, installed equipment. Plant sections composed entirely of new equipment would have equipment utilization factors of 1.0.

TABLE 16

## Technology Development Status

State of Technology	Process Contingency Factor*
New Concept with Limited Data	1.7
Bench-Scale Data Available	1.5
Small Pilot Plant Data Available	1.25
Full-Size Module Has Been Operated	1.15
Process is Used Commercially	1.00

\* As a fraction of installed equipment cost.

Column 6 -- The retrofit factor is a capital cost multiplier which only reflects the complexity of construction and refurbishment activities in an existing plant. The magnitude of the retrofit factor depends on the "degree of difficulty" of the in-plant work and typically falls in the range of 1.0 to 2.5. Retrofit factors are to be supplied for each power plant section in Column 6 of Worksheets 4A and 4B. Table 17 provides some guidelines for selecting retrofit factors.

TABLE 17

## Retrofit Factors

<u>EQUIPMENT LOCATION DESCRIPTION</u>	<u>VALUE</u>
Interferences are similar to new plant with adequate crew work space. Free access for large cranes and adequate space for standard layout of equipment.	1.02
Some above ground interferences and work space limitations. Access for large cranes limited to two sides. Equipment must be on elevated slabs or located remotely.	1.10
Limited space. Interference with existing structures or equipment which cannot be relocated. Special designs or major ductwork modifications are necessary. Access for cranes limited to one side. Majority of equipment on elevated slabs or remotely located.	1.25
Severely limited space and access. Crowded working conditions. Access for large cranes blocked from all sides. Major modifications of existing equipment required.	2.00

Column 7 -- The retrofitted or repowered installed equipment's incremental cost for each plant section should be calculated by applying the multipliers given in Columns 4 through 6 to the amount shown in Column 3. Specifically, for each plant section:

Retrofitted/ Repowered Installed Equipment Cost	=	New Plant Installed Equipment Cost	x	Process Contingency Factor	x	Equipment Utilization Factor (If Applicable)	x	Retrofit Factor
---	---	---	---	----------------------------------	---	---	---	--------------------

Section 1 of Worksheet 4C is to be completed in a manner similar to Worksheets 4A and 4B except that there are no reconstruction related factors (since this is a new, "grass roots" plant). Refer to instructions for Worksheets 6 and 7 for definitions of terms in parts 2 through 10. Parts 3, 4, 5, 7, 8, and 9 are to be based upon the proposer's judgment and narrative support for the entries selected is expected. Line item 6 is calculated by the proposer based on the entries appearing above.

#### 4.5 Worksheet 5: Variable Operating Cost Calculation

By convention only consumed and produced commodities appear in the variable cost category. Information associated with commodities consumed and produced in the modified power plant is to be provided in Worksheet 5. This information is used to calculate variable operating costs. This worksheet addresses utility requirements, raw materials, waste effluents, and by-products sold for credits associated with the clean coal plant. Steam and auxiliary power (line items 5 and 6) should be entered on this worksheet only if they are not accounted for in the plant electric output and heat rates reported on Worksheet 1A. Table 18 provides DOE's operating unit cost values to be used in this worksheet; the proposer can input alternative unit costs, if justified. Commodities can have both negative and positive costs depending on whether they are sold or bought. The total variable operating cost is obtained by multiplying the consumption (quantity/hr) by the unit cost. A total value is obtained by summing the individual costs. The total cost should then be converted to mills/kW-hr as follows:

$$\frac{\text{mills}}{\text{KW-HR}} = \frac{(\text{Total Variable Costs, \$/Hr}) \times (1000, \text{MILLS/\$})}{(\text{Net rated output, KWe})}$$

The net rated plant output is specified in Worksheet 1A.

#### 4.6 Worksheet 6: Annual Fixed O&M Cost Calculation

By convention, all operating and maintenance labor and maintenance materials appear in the fixed cost category. Annual capital charges, while normally a "fixed cost" element, are not requested of the proposer. Information to calculate the total annual labor costs for the retrofitted or repowered base case plant is to be provided on this worksheet. Line item 1, the operating labor cost, is based on the number of operating jobs required to run the entire utility plant, as modified by the proposed technology. As a point of information, the reference 500 MWe power plant requires 24 operators per shift and 4.2 shifts per week (which allows for continuous, year round operation).

Line item 2, total annual maintenance costs, is estimated as a percentage of the replacement cost of the individual sections in the plant. In column 1 of this line item, the plant section numbers as listed in column 1 of Worksheet 4 (A or B) are to be provided. The new plant installed equipment costs are to be provided in column 2 of this line item. For repowering technologies, the new plant installed costs are listed in column 3 of Worksheet 4B. For retrofit technologies, each section's total new plant installed equipment cost should be estimated and entered in Column 2. Alternatively, entries in Columns 2 and 3 may be omitted and the estimated maintenance cost for all the equipment in each plant section entered directly in Column 4. In column 3, the Maintenance Factors (as a fraction of the total replacement cost for a plant section) should be listed. Recommended maintenance factors, based on the type of processing conditions within the plant section, are given in Table 19. The proposer should note that annual maintenance costs could either increase or decrease, relative to the reference power plant, as a result of applying the clean coal technology. Add-on equipment installed at the power plant would normally be expected to increase maintenance costs. However, use

of a processed fuel (from the remote 750 tph coal processing plant) or various power plant modifications may reduce maintenance on individual sections at the power plant. Maintenance costs for each plant section are to be calculated and entered in column 4. The total annual maintenance costs are to be distributed into maintenance labor and material in the ratio of 40% labor/60% material. Line item 3, annual administration and support labor, is to be estimated as 30% of operating plus maintenance labor. Line item 4 aggregates the fixed labor costs. The annual fixed costs in Line 6, in MM \$, should be converted into mills/kw-hr. The net rated output, kWe, and plant availability factor, %, to be used in this calculation are specified in Worksheet 1A.

TABLE 18  
OPERATING COST VALUES<sup>1</sup>  
(1986 \$)

Commodity	Value/Units
OPERATING LABOR PAY RATE	\$20.39 / HR
Variable Operating Costs	
-----	
**FUELS**	
FUEL OIL (NO. 6)	\$0.95/GAL
METHANE	\$5.00/1000 CU. FT.
ANTHRACITE	\$83.00/TON
METHANE	\$5.00/1000 CU. FT.
ANTHRACITE (HHV = 15,135 Btu/lb)	\$83.00/TON
BITUMINOUS COAL (UP TO 1% SULFUR, HHV=10,566 BTU/LB)	\$42.70/TON
BITUMINOUS COAL (1.0 TO 2.0 % S, HHV=11,825 BTU/LB)	\$39.40/TON
BITUMINOUS COAL (MORE THAN 2% S, HHV=11,298 BTU/LB)	\$35.00/TON
**WATER/STEAM**	
CONDENSATE	\$0.70/1000 LB
RAW WATER	\$0.60/1000 GAL
COOLING WATER	\$0.15/1000 GAL
STEAM	
LOW PRESSURE (0 - 70 psia)	\$2.85/1000 LB
MEDIUM PRESSURE (70 - 250 psia)	\$3.50/1000 LB
HIGH PRESSURE (250 - 2400 psia)	\$5.30/1000 LB
**POWER**	
PARASITIC POWER	\$0.050/KWHR
INCREMENTAL REPLACEMENT POWER COST	\$0.035/KWHR
**SORBENTS/CHEMICALS**	
CATALYST (COPPER OXIDE)	\$8,000.00/TON
AMMONIA	\$185.00/TON
LIME	\$65.00/TON
LIME (HYDRATED)	\$70.00/TON
LIMESTONE	\$15.50/TON

NAHCOLITE	\$37.80/TON
EDTA	\$766.50/TON
TRONA	\$120.80/TON
LIQUID OXYGEN	\$109.00/TON
ALLIED CATALYST	\$2,000.00/TON
CLAUS CATALYST	\$850.00/TON
PHOSPHORIC ACID	\$560.00/TON
SELEXOL ABSORBENT	\$11.00/GAL
DIATOMACEOUS EARTH	\$300.00/TON
LAND	\$6,500.00/ACRE

**\*\*WASTE DISPOSAL CHARGES\*\***

FABRIC FILTER BAGS	\$86.10/BAG
DISPOSAL CHARGES	
DRY SOLIDS (TRUCKED-LANDFILL)	\$8.00/TON
FLY ASH (TRUCKED-LANDFILL)	\$6.50/TON
GYPSUM (TRUCKED-LANDFILL)	\$6.50/TON
SLUDGE	\$9.25/TON

**\*\*BY-PRODUCT CREDIT\*\***

SULFUR	\$90.00/LONG TON
FERTILIZER	\$105.00/TON
SULFURIC ACID	\$68.85/TON

<sup>1</sup> Any commodity may be sold for 80% of its "cost value".

TABLE 19  
Maintenance Data

Type of Processing Conditions Within Plant Section	Annual Maintenance Factor*
Corrosive and Abrasive Slurries	0.06
Solids at High Pressure and/or High Temperature	0.04
Solids at Low Pressure and/or Low Temperature	0.04
Liquids and Gases	0.02
Utilities	0.01

\* As a fraction of installed cost.

#### 4.7 Worksheet 7: Capital Requirement Calculation

This worksheet develops the total capital requirement for retrofitted or repowered commercial power plants using a technique which parallels an EPRI format. Total capital cost, as computed by this worksheet, includes the total installed equipment cost, general facilities, project contingency,

\* EPRI Technical Assessment Guidelines, EPRI P-4463-SR, Volume 1, 1986

engineering and home office fee, AFDC and price escalation, royalty allowance, preproduction costs, inventory capital, initial catalysts and chemicals, and a construction downtime charge. The latter charge reflects the replacement cost of lost power generation during plant modification. Appropriate factors for allowance of funds for interest and price escalation during construction are provided in Table 20.

Table 20  
Allowance of Funds for Price Escallation and Interest  
During Construction

Construction Period (Years)	AF (Fraction of Total Plant Cost)
0.5	0.000
1	0.030
2	0.062
3	0.096
4	0.130
5	0.167

#### 4.8 Worksheet 8: Specification of Technology Application Boundaries

In order to properly evaluate each technology (or an integrated system of technologies), DOE needs to determine the range of operating conditions over which the proposer believes his technology to be applicable. Such data are necessary to evaluate the potential cost and environmental impact of a proposed technology. Therefore, the proposer should predict the degree of applicability of his technology, quantify controlling design parameters (e.g., reagent consumption), and document the probable costs associated with key application boundaries.

The market potential of clean coal technologies (other than coal beneficiation) is considered to be primarily determined by the ranges of applicability to unit size, boiler type, and coal sulfur content. DOE considers the plant sizes and coal sulfur content presented in the application matrix (Table 21) to encompass the majority fraction of the boiler retrofit and repowering market; ideally, retrofit and repowering technologies should perform effectively and economically at the limits identified in Table 21. However, the proposer may redefine Table 21 to provide new "boundary values" of plant size and sulfur content if this provides a better representation of the proposed technology.

TABLE 21

Sensitivity Application Cases  
(Apply to All Technologies  
Except Coal Processing)

Coal Sulfur Content, %	Existing Power Plant Net Size, MWe		
	100[100]	500[250]	800[500]
1.0	1		2
2.5		*	
4.0	3		4

\* Base Case technology application described in  
Worksheets 1 through 7.  
1,2,3,4: Boiler retrofit and repowering boundary  
applications.

In a like manner, the applicability of coal beneficiation technologies is dependent upon the coal washability characteristics and coal sulfur content and distribution (pyritic versus total sulfur). DOE considers the application matrix presented in Table 22 to encompass most of the boiler retrofit market applicable to coal beneficiation.

TABLE 22  
Sensitivity Application Cases  
(Apply to Coal Processing Technologies)

Total Coal Sulfur Content, %	Pyritic Sulfur Fraction		
	40%	60%	80%
1.0		1	
2.5		*	2
4.0	3		4

\* Base Case technology application  
described in Worksheets 1 through 7.  
1,2,3,4: Coal processing boundary applications.

Worksheet 8 must be completed to establish the applicability range and environmental performance at the boundaries of the proposed technologies. Coal processing technology boundaries are to be presented in Section II of Worksheet 8; all other retrofit/repowering technology boundaries utilize Section I. If a proposed technology has a different applicability than indicated by Tables 21 and 22, the proposer is to substitute other parametric values in the spaces between parentheses on Worksheet 8. Explanations should be given for the changes. To complete Section I, the proposer is to insert two values -- emissions of SO<sub>2</sub> and NO<sub>x</sub> as NO<sub>2</sub>, expressed as lb/MMBTU -- in the

space provided between the brackets. To complete Section II for coal processing technologies,  $\text{SO}_2$  and  $\text{NO}_x$  emissions are to be inserted between the brackets. These emissions are those resulting from combustion of the product fuel in the base case power plant (plus those  $\text{SO}_2$  and  $\text{NO}_x$  emissions which occur at the coal processing plant, if any).

In calculating the performance of coal beneficiation technologies applied to retrofit boundary applications, the proposer should assume that coal washability characteristics given for the base case coal in Tables 8, 9, and 9A apply to the new or "boundary limit" coals. Specifically, it should be assumed that the fractions of ash and pyritic sulfur partition between the float and sink fractions in the same ratios as for the reference coal. Also, the ash content of the new coal should be assumed to be the same as for the reference coal.

#### 4.9 Worksheet 9: Sensitivity Cost Data

In a manner consistent with the generation of the base case data and using the base case design as a point of departure, the proposer must estimate the key parameters relating to capital, fixed, and variable costs applicable to the proposed technology for at least the four power plant sensitivity cases identified in Worksheet 8. This data is to be entered on Worksheet 9A. Similar types of information are requested for coal processing plants and are to be entered on Worksheet 9B.

#### 4.10 Worksheet 10: Sensitivity Operating Commodity and Effluent Data

The proposer is required to estimate the design values of key plant commodities and effluents for the proposed technology at the boundary applications identified in Worksheet 8, based on the completed base case design. Worksheets 10A and B are provided to document the results for power plants and coal processing plants, respectively. Refer to Worksheet 5 for similar treatment of the base case.

#### 4.11 Data Usage

The data generated in the above worksheets is to be utilized in preparing the Cost and Performance Table(s) to be provided in Section II.2.5 of the proposal. The offeror is reminded that the information requested by this Appendix is to provide the principal technical reference data used in evaluating the Commercialization Factors.

WORKSHEET 1A  
General Description of  
Mature Version of Retrofit and Repowering Technologies

PROPOSER'S NAME: \_\_\_\_\_

TECHNOLOGY DESCRIPTION: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PLANT PERFORMANCE SUMMARY<sup>1</sup>

	Reference Plant	After Clean Coal Technology		
1. Coal Feed Rate (Basis: As Received), tph	196 [98]			
2. Emissions, lb/MMBtu				
SO <sub>2</sub>	3.8			
NO <sub>x</sub> as NO <sub>2</sub>	1.2			
Particulate Matter	0.10			
3. Rated Output Power Production, MWe				
Total Gross	536.0 [268.0]			
Total Net	509.5 [254.8]			
4. Net Heat Rate <sup>2</sup> (Basis: HHV), Btu/kWh	9,493			
5. Plant Availability <sup>3</sup> Factor, %	75			
6. Plant Downtime Interval Due to Application of Clean Coal Technology, Days				
7. For Retrofit Technologies:				
A. Indicate if Technology is in Pre-Combustion, Combustion, and/or Post-Combustion Processing Zone:				
B. Emission Control Specifications, % Reduction:				
<u>Emission</u>	<u>Pre-Combustion</u>	<u>Combustion</u>	<u>Post-Combustion</u>	<u>Overall</u>
SO <sub>2</sub>	_____%	_____%	_____%	_____%
NO <sub>x</sub>	_____%	_____%	_____%	_____%

<sup>1</sup> Full load design conditions.

<sup>2</sup> Plant boundary fuel input to busbar electricity.

<sup>3</sup> Fraction of year (8760 hours) the plant is "available" to produce power at some useful output level (excludes planned or unplanned shutdowns).

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME: \_\_\_\_\_

WORKSHEET 1B  
 General Description of Coal Processing  
 (Applies Only to Processing of Coal at a Site Remote from the Power Plant)

TECHNOLOGY DESCRIPTION: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

PLANT PERFORMANCE SUMMARY<sup>1</sup>

	<u>Input to Coal Processing</u>	<u>Output of Coal Processing</u>
1. Coal Feed		
Coal Feed and Product Rates, tph	750	
Fuel Higher Heating Value, Btu/lb	12,360	
Fuel Sulfur Content, wt %	2.5	
Fuel Sulfur Content, lb/MMBtu	2.0	
2. Feed and Product Characteristics (Proximate Analysis, wt %)		
Fixed Carbon	50.6	
Volatile Matter	30.6	
Ash	16.4	
Moisture	3.0	
3. % Yield (ton/ton feed, dry basis)		
4. % Btu Recovery Based on HHV		
5. Plant Annual Availability <sup>2</sup> Factor, %		
6. Plant Construction Time, Days		
7. Total Annual Output, Tons (dry basis)		
8. Product a Slurry? (Y/N)		
Wt % of Solids if a Slurry		

<sup>1</sup> All coal compositions on an as-received basis, except as noted.

<sup>2</sup> Fraction of year (8760 hours) the plant is "available" to process coal at some useful rate (excludes planned or unplanned shutdowns).

TECHNOLOGY: \_\_\_\_\_

PROPOSER'S NAME: \_\_\_\_\_

WORKSHEET 2

Block Flow Diagram Showing Major Plant Sections  
After Clean Coal Technology Modifications

TECHNOLOGY: \_\_\_\_\_  
PROPOSER'S NAME: \_\_\_\_\_

WORKSHEET 3  
Description of Major Plant Sections in  
Block Flow Diagram on Worksheet 2

Section Name: \_\_\_\_\_

Process Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Key Design Criteria: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Process Sequence: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Existing Equipment Mods: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME: \_\_\_\_\_

## WORKSHEET 4A

## TOTAL INSTALLED EQUIPMENT COSTS FOR RETROFITTED POWER PLANT

(1) Plant Section	(2) Plant Section Title	(3) New Plant Installed Equipment Cost, MM \$	(4) Process Contingency Factor	(5) Retro- fit Factor	(6) Retrofit Installed Equipment Cost, MM\$
100	Non-Coal Material Feed and Handling	_____	_____	_____	_____
200	Coal Preparation and Storage	_____	_____	_____	_____
300	Fuel and Oxidant Feed and Handling	_____	_____	_____	_____
400	Combustion/Steam Generation	_____	_____	_____	_____
500	Fuel Gas Processing and Handling	_____	_____	_____	_____
600	Power Generation	_____	_____	_____	_____
700	SO <sub>2</sub> Removal Unit	_____	_____	_____	_____
800	NO <sub>2</sub> Removal Unit	_____	_____	_____	_____
900	Particulate Removal	_____	_____	_____	_____
1000	Flue Gas Ducting and Fans	_____	_____	_____	_____
1100	Sorbent Regeneration	_____	_____	_____	_____
1200	By-Product Processing and Handling	_____	_____	_____	_____
1300	Chimney or Stack	_____	_____	_____	_____
1400	Waste Handling	_____	_____	_____	_____
1500	Balance of Plant	_____	_____	_____	_____
1600	Other Areas*	_____	_____	_____	_____
TOTALS, MM \$		_____	_____	_____	_____

\* Utilized only if equipment location is not identified in the above list.

TECHNOLOGY: \_\_\_\_\_  
PROPOSER'S NAME: \_\_\_\_\_

**WORKSHEET 4B**

### TOTAL INSTALLED EQUIPMENT COSTS FOR REPOWERED POWER PLANT

[illegible]

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME: \_\_\_\_\_

WORKSHEET 4C  
 TOTAL COSTS FOR NEW, 750 TPH, REMOTE, COAL PROCESSING PLANT

1. Capital Costs, MM \$

(1) Plant Section	(2) Plant Section Title	(3) Installed Equipment Costs	(4) Process Contingency Factor	(5) = (3 X 4) Capital Costs
100	Raw Material Feed and Handling System (Excludes Fuel)	_____	_____	_____
200	Fuel Preparation and Storage System	_____	_____	_____
210	Coal Receiving and Storage	_____	_____	_____
220	Dense Media Recovery and Ash Conveyor	_____	_____	_____
230	Coal Screening	_____	_____	_____
240	Coarse Coal Separation	_____	_____	_____
250	Fine Coal Separation	_____	_____	_____
260	Intermediate Coal Separation	_____	_____	_____
270	Dewatering and Drying	_____	_____	_____
280	Clean Coal Storage and Handling	_____	_____	_____
1500	Common Support Systems	_____	_____	_____
1600	Other Equipment	_____	_____	_____
1700	Land	_____	_____	_____
1800	Other "Proposer Defined" Sections	_____	_____	_____

2. Total Capital Costs, MM \$ \_\_\_\_\_

3. Project Contingency Allowance, MM \$ \_\_\_\_\_

4. Engineering, Home Office, General Facilities and Royalties, MM \$ \_\_\_\_\_

5. Interest During Construction \_\_\_\_\_

6. Working Capital, MM \$ \_\_\_\_\_

7. Total Plant Investment, MM \$ \_\_\_\_\_

8. Total Annual Maintenance Cost, MM \$ \_\_\_\_\_

9. Total Annual Fixed O&M Cost, MM \$ \_\_\_\_\_

10. Variable Cost (Including Profit), \$/HR \_\_\_\_\_

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME: \_\_\_\_\_

WORKSHEET 5  
 Variable Operating Costs  
 for Clean Coal Power Plant at Design Conditions

Commodities	(1) \$/Unit*	(2) Quantity/Hr	(3) Commodity Cost \$/Hr
1. Fuels (e.g., Coal, Natural Gas)			
A.** _____	_____	_____	_____
B. _____	_____	_____	_____
C. _____	_____	_____	_____
2. Sorbents/Chemicals (e.g., Limestone)			
A. _____	_____	_____	_____
B. _____	_____	_____	_____
C. _____	_____	_____	_____
3. Raw Water	_____	_____	_____
4. Cooling Tower Blowdown Water	_____	_____	_____
5. HP Steam (> 100 psig)	_____	_____	_____
LP Steam (< 100 psig)	_____	_____	_____
A. LP _____	_____	_____	_____
B. MP _____	_____	_____	_____
C. HP _____	_____	_____	_____
6. Auxiliary Power	_____	_____	_____
7. Waste Effluents			
A. Dry, Granular Solids	_____	_____	_____
B. Sludge	_____	_____	_____
8. By-Product Credits			
A. _____	_____	_____	_____
B. _____	_____	_____	_____
C. _____	_____	_____	_____
9. Fuel Credit			
A. _____	_____	_____	_____
10. Totals			
A. Total Variable Operating Costs, \$/Hr			_____
B. Total Variable Operating Costs, Mills/Kw-Hr***			_____
11. Chemical Analysis of Fresh Sorbent, wt % AR Basis			

Sorbent A (above)		Sorbent B (above)		Sorbent C (above)	
Constituent	Wt %	Constituent	Wt %	Constituent	Wt %
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

\* From Table 18, or the proposer's values (with explanation and justification).

\*\* If this fuel comes from a coal processing plant, enter only a value in column (2), tons/hr, and DOE will calculate the associated costs.

\*\*\* See worksheet instructions to calculate.

TECHNOLOGY: \_\_\_\_\_  
 PROPOSERS NAME: \_\_\_\_\_

WORKSHEET 6  
 POWER PLANT ANNUAL FIXED O&M COSTS  
 (1986 \$)

1. Total Annual Operating Labor Costs

Number of Operators Required per Shift \_\_\_\_\_  
 Total Operating Hours per Year \_\_\_\_\_  
 Operating Labor Pay Rate per Hour (from Table 16) \_\_\_\_\_

TOTAL ANNUAL OPERATING LABOR COSTS (MM \$) \_\_\_\_\_

2. Total Annual Maintenance Labor Costs

(1) Plant Section Number	(2) New Plant Installed Equipment Cost (MM \$)	(3) Maintenance Factor	(4) Maintenance Cost (Col.2 X Col.3) (MM \$)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Total Annual Maintenance Costs \_\_\_\_\_

Total Annual Maintenance Labor Cost (MM \$) \_\_\_\_\_

3. Annual Administrative and Support Labor Cost (MM \$) \_\_\_\_\_

4. Total Annual Fixed Labor Cost (MM \$) \_\_\_\_\_

5. Total Annual Maintenance Material Cost (MM \$) \_\_\_\_\_

6. Total Annual Fixed O&M Costs (MM \$) \_\_\_\_\_

7. Total Annual Fixed O&M Costs (Mills/KWHR) \_\_\_\_\_

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME: \_\_\_\_\_

WORKSHEET 7  
 POWER PLANT CAPITAL REQUIREMENT SUMMARY

Enter data where required

Capital Item	Capital Requirement (MM \$)
(A) Process area capital (Worksheet 4A or 4B, Col. 7)	_____
(B) General facilities (10% of A)	_____
(C) Project contingency (20% of (A + B))	_____
(D) Engineering and home office fees (10% of A)	_____
(E) Total plant cost (A + B + C + D)	_____
(F) AFDC and Price Escallation During Construction (AF, see Table 20) Enter construction period _____ years	_____
(G) Total plant investment (E + F)	_____
(H) Royalty allowance (0.5% of A)	_____
(I) Preproduction costs <sup>1</sup>	_____
(J) Inventory Capital <sup>2</sup>	_____
(K) Initial Catalyst & Chemicals <sup>3</sup>	_____
(L) Total capital requirement (G + H + I + K)	_____
(M) Construction downtime Charge <sup>4</sup> , Enter # of days: _____	_____
(N) Total Capital Cost (L + M)	_____

<sup>1</sup> One month fixed O&M costs, plus one month variable operating costs excluding fuel, plus 25% of full capacity fuel cost for one month, plus 2% of G, total plant investment.

<sup>2</sup> Equal to variable operating costs for 60 days assuming full load.

<sup>3</sup> Consistent with worksheet 4A, 4B, and/or 4C equipment.

<sup>4</sup> Downtime Charge =  $0.00055 \times (\text{Net Rated Output, MWe}) \times (\text{Days})$

TECHNOLOGY:

PROPOSER'S NAME: \_\_\_\_\_

**WORKSHEET 8**  
**Specification of Technology Application**  
**Boundaries and Performance**

**I. All Technologies, Excluding Coal Processing**

Emissions as a function of unit size and coal sulfur content: (Fill in new values in ( ) to document differing technology applicability; fill in [ ] to document projected environmental performance.)

<u>Coal Sulfur Content, %</u>	<u>Net Power Plant Size, MW(e)</u>			<u>Emissions, lb/MMBtu</u>
	100 [100] ( )	500 [250] ( )	800 [500] ( )	
1.0 ( )	[ ]	[ * ]	[ ]	SO <sub>2</sub> NO <sub>x</sub> as NO <sub>2</sub>
2.5				SO <sub>2</sub> NO <sub>x</sub> as NO <sub>2</sub>
4.0 ( )	[ ]		[ ]	SO <sub>2</sub> NO <sub>x</sub> as NO <sub>2</sub>

**II. Coal Processing Technologies**

Range of Technology Application and Related Performance  
 (Fill in new values in ( ) to document differing technology applicability; fill in [ ] to document projected performance.)

<u>Total Coal Sulfur Content, %</u>	<u>Pyritic Sulfur Fraction</u>			<u>Equivalent Emissions, lb/MMBtu</u>
	40% ( )	60% ( )	80% ( )	
1.0 ( )		[ ** ]		SO <sub>2</sub> NO <sub>x</sub> as NO <sub>2</sub>
2.5			[ ]	SO <sub>2</sub> NO <sub>x</sub> as NO <sub>2</sub>
4.0 ( )	[ ]		[ ]	SO <sub>2</sub> NO <sub>x</sub> as NO <sub>2</sub>

\* These are emissions values for the base case power plant using the reference coal or the product fuel derived from the reference coal.

\*\* These are emissions values resulting from combustion of the product fuel (derived from the reference coal) in the base case power plant, plus emissions from the coal processing plant (if any).

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME: \_\_\_\_\_

**WORKSHEET 9A**  
**Summary of Estimated Costs for Power Plant Boundary Applications\***

	Sensitivity Cases			
	1	2	3	4
<b>I. CAPITAL COST ESTIMATE</b>				
Total Grass Roots Cost, MM \$ (Based on column 7 of Worksheet 4)	_____	_____	_____	_____
Total Capital Cost, MM \$ (Based on Worksheet 7, Item N)	_____	_____	_____	_____
<b>II. FIXED O&amp;M COST ESTIMATE</b>				
Number of Operators per Shift	_____	_____	_____	_____
Plant Available Hours Per Year	_____	_____	_____	_____
Total Annual Maintenance Cost, MM \$	_____	_____	_____	_____
Total Annual Fixed Cost, MM \$	_____	_____	_____	_____
<b>III. VARIABLE COST ESTIMATE</b>				
Coal Feed Rate, Tons/Hr	_____	_____	_____	_____
Total Variable Cost, \$/Hr	_____	_____	_____	_____
Total Variable Cost, Mills/KWHR	_____	_____	_____	_____

---

\* Cases 1 through 4: Boundary applications identified on Worksheet 8.

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME \_\_\_\_\_

## WORKSHEET 9B

## Summary of Estimated Costs for Coal Processing Plant Boundary Applications\*

	Sensitivity Cases			
	1	2	3	4
I. CAPITAL COST ESTIMATE, MM \$ (Based on Worksheet 4C, Line 7)	_____	_____	_____	_____
II. FIXED O&M COST ESTIMATE				
Number of Operators per Shift	_____	_____	_____	_____
Plant Available Hours Per Year	_____	_____	_____	_____
Total Annual Maintenance Cost, MM \$	_____	_____	_____	_____
Total Annual Fixed Cost, MM \$	_____	_____	_____	_____
III. VARIABLE COST ESTIMATE, \$/HR	_____	_____	_____	_____
IV. PROCESSING PLANT PERFORMANCE	_____	_____	_____	_____
Product Fuel Output, TPH	_____	_____	_____	_____
Product Fuel Higher Heating Value, BTU/LB	_____	_____	_____	_____
Product Fuel Total Sulfur Content, %	_____	_____	_____	_____
Fraction of BTU Recovery, %	_____	_____	_____	_____

\* Cases 1 through 4: Boundary application identified on Worksheet 8.

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME: \_\_\_\_\_

WORKSHEET 10A  
 Sensitivity Data for Power Plant Commodities and Effluents

		<u>Sensitivity Cases</u>			
		<u>AMOUNT/YR</u>			
<u>Item</u>	<u>Units</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
1. Fuels (e.g., Coal, Natural Gas)					
A. _____	_____	_____	_____	_____	_____
B. _____	_____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____	_____
2. Sorbents/Chemicals					
A. _____	_____	_____	_____	_____	_____
B. _____	_____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____	_____
3. Raw Water Input	<u>GPM</u>	_____	_____	_____	_____
4. Cooling Tower Blowdown Water	<u>GPM</u>	_____	_____	_____	_____
5. Auxiliary Power	<u>kW</u>	_____	_____	_____	_____
6. Waste Effluents					
A. Dry, Granular Solids	_____	_____	_____	_____	_____
B. Sludge	_____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____	_____
D. _____	_____	_____	_____	_____	_____
7. By-Products					
A. _____	_____	_____	_____	_____	_____
B. _____	_____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____	_____
8. Fuel Credit					
A. _____	_____	_____	_____	_____	_____

TECHNOLOGY: \_\_\_\_\_  
 PROPOSER'S NAME: \_\_\_\_\_

WORKSHEET 10B  
 Sensitivity Data for Coal Processing Plant Commodities and Effluents

		<u>Sensitivity Cases</u>			
		<u>AMOUNT/YR</u>			
<u>Item</u>	<u>Units</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
1. Sorbents/Chemicals	_____	_____	_____	_____	_____
A. _____	_____	_____	_____	_____	_____
B. _____	_____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____	_____
2. Raw Water Input	_____	_____	_____	_____	_____
3. Power Consumption	_____	_____	_____	_____	_____
4. Waste Effluents	_____	_____	_____	_____	_____
A. Dry, Granular Solids	_____	_____	_____	_____	_____
B. Sludge	_____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____	_____
D. _____	_____	_____	_____	_____	_____
5. By-Products	_____	_____	_____	_____	_____
A. _____	_____	_____	_____	_____	_____
B. _____	_____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____	_____

## Appendix J

### INFORMATION REQUIREMENTS FOR THE NATIONAL ENVIRONMENTAL POLICY ACT

NOTE: *The information described in this Appendix need not be submitted with the proposal.*

*This Appendix is intended for the offeror's information to assist with planning the project. The information discussed herein will be required after award.*

Information Requirements for the National Environmental Policy Act

A self-contained Volume of Environmental Information on the proposed project must be submitted to DOE by the proposers whose projects are awarded cooperative agreements. The information will be used to facilitate DOE's preparation of the environmental documents required to comply with the National Environmental Policy Act of 1969 (NEPA). The details provided are not intended to be prescriptive. In some cases, the details may not be applicable to an offeror's proposal, and in other cases, the detail given may not be sufficient to cover all applicable environmental, health, safety, and socioeconomic impacts. The level of information should be compatible with the nature of the project and its stage of development.

1.0 SUMMARY

The participant should prepare a short summary of the environmental, health, safety, and socioeconomic information and analysis. The summary should focus on:

- o the potential beneficial and detrimental environmental, health, safety, and socioeconomic impacts which will result from the project;
- o the major environmental, health, safety, and socioeconomic risks to construct, operate, and dismantle or dispose of the proposed facility;

- o conclusions which can be made about the significance of predicted environmental, health, safety, and socioeconomic effects;
- o anticipated near-term changes or additions to applicable environmental and other regulations, and related plans to use best control technology and practices economically feasible to meet the anticipated requirements;
- o alternatives available for meeting regulations and mitigating impacts; and,
- o all unresolved environmental, health, safety, and socioeconomic issues and unquantifiable effluents/emissions which may affect the validity of the impact analysis, especially the details for which information is not available at this stage of project development.

## 2.0 EXISTING SITE CHARACTERISTICS

This section provides a description of the environmental setting of the proposed project. It is expected that proposers will use the most recent existing data sources (i.e., Census, EPA and USGS for ambient air and surface water monitoring, and appropriate state and federal agencies and publications, etc.). Data from these and others sources are generally readily available and can be easily accessed.

- o Brief description, using visuals as appropriate, of project site
  - description of physical appearance

- description of existing landforms such as drainage areas, runoff areas, etc., and
- description of existing offsite facilities such as pipelines and transmission lines, transportation access, water sources, etc.
- o Description of environmental setting including a description of the environmental conditions based on available or existing information prior to the proposed project. The description should provide sufficient information to permit independent evaluation by reviewers of factors that could be affected by the proposed project, and should include photographs or illustrations to provide the reviewers with visual orientation to the existing environment. USGS maps may also be useful to relate the conditions described to specific areas.

The following environmental factors may be applicable if the Consequences of Project (4.0 below) indicate a potential significant change from existing conditions. If sampling data are used to describe the environmental conditions, the relationship of the sampling point to the proposed facility should be shown.

- atmospheric conditions, including downwind conditions; identification of affected air quality control region(s); local climate conditions; existing ambient air quality; conditions/features downwind that may be impacted.

- hydrologic conditions, including identification of watershed and downstream drainage; surface and groundwater quality to be impacted; conditions downstream or within drainage areas including flood plains; unique aquatic habitats; water recreation areas and public water supplies; hydrologic hazard such as flood or storm runoff.
- geologic conditions including erosion potential; seismic hazards; topographic stability and features; description of formations and faulting; productivity of soil, soil species.
- ecological conditions including endangered species; flora, fauna, and wildlife; unique ecological or sensitive communities or habitats, such as wetlands.
- socioeconomic conditions including population, migrational trends, employment and labor mix, available public services.
- aesthetic conditions including scenic vistas, historic/archaeological sites, cultural values.
- tribal or other religious practices at or near the proposed project.
- identification or any other major energy or chemical complexes existing or planned sufficiently close to the site to mutually impact environmental, health, safety, or socioeconomic considerations.

### 3.0 PROJECT DESCRIPTION

This section should provide the following information as it relates to facility requirements, overall plant site and setting, and the plant/process residuals, as appropriate.

- o Project resource requirements, including energy form and quantity, land, water, labor, construction and operation materials, etc.
- o Project site plan and topographic maps, if appropriate, including:
  - description of physical appearance, and
  - description of fuel storage area, drainage and runoff patterns
- o Offsite facility requirements including:
  - pipelines and transmission lines,
  - transportation access (rail, road, barge),
  - water intake and discharge, and
  - waste treatment disposal or recycling/reuse facilities.

- o In-plant and off-site discharges, and on-site waste storage during construction, operation, maintenance, and disposition of the project including
  - quantity, physical and chemical description of air emissions (including fugitive emissions), liquid effluents, solid wastes, and other discharges (including heat, noise, and odor).
  - identify process streams, feedstocks, wastes and other substances handled or stored on-site that conceivably might leak or be accidentally released and which could pose risks to employee and/or public health and safety. Indicate their composition and the magnitude of stored amounts and throughput rates.
  - identification of existing, and where possible, anticipated standards for those areas of environmental concern that are regulated, with a comparison between those standards and expected emissions.
  - description of mitigating measures employed in the project to reduce potential environmental effects.
  - where uncertainties exist about the performance of control and mitigation methods, describe alternative control and mitigation methods that are reasonably available in the event that the predicted effectiveness of proposed methods is not achieved.

#### 4.0 CONSEQUENCES OF THE PROJECT

This section should contain the following information concerning impacts and consequences of the project (at selected site and the alternative sites, if appropriate). Plans for offsetting such impacts should be included. This section should also include a summary and ranking of the consequences in the approximate order of decreasing risk to project implementation. The ranking within each subsection should be based on consideration of items such as: a) nature and magnitude of impact; b) uncertainty in the effectiveness of proposed environmental controls; c) lack of definitive data on plant streams; and, d) uncertainties in anticipated regulations.

Detail of subsequent discussion should be commensurate with assessed risks.

##### 1. Consequences of Construction

- o Overall description of construction activities, including disruption, duration, schedule, etc.
- o Environmental, health, and safety impacts, including:
  - atmospheric impacts, including projection of air quality degradation;
  - hydrologic impacts, including changes in groundwater/surface water quality and quantity, and stream diversion;

- land use impacts during and after construction activities;
- public and occupational health consequences of construction activities, including accidents; and
- ecological impacts

- o Socioeconomic impacts.

## 2. Consequences of Operation and Disposition

- o Environmental, health, and safety impacts as a result of project operation and disposition including mitigating measures, and an indication if impacts from other "nearby" planned energy or chemical complexes are included in the projected impacts. Describe the measures, if any, planned for mitigation of anticipated impacts. Indicate what type of follow-up data collection, monitoring and response procedures will be followed to detect impacts, confirm the performance of mitigating measures, and respond to potential problems. This information should be utilized and cross-referenced in the Environmental Monitoring Plan and EMP Outline prepared pursuant to Section 3.27.4 and Appendix N of the PON.
- Atmospheric impacts, including projection of air quality degradation (give indication of atmospheric models used, if used in projection).

- Hydrologic impacts, including changes in groundwater/surface water quality and quantity, from runoff from storage piles, leachates from waste disposal sites and wastewater cleaning and discharges.
- Land use impacts resulting from solid waste disposal (including toxic and hazardous substances) or other discharges.
- Geologic impacts, including subsidence, seismicity, erosion, stream diversion, flood plain intrusion, soil permeability and infiltration, integrity of solid waste disposal sites, etc.
- Public and occupational health and safety impacts, including exposure to toxic and hazardous substances, noise, odor, and potential accidents.
- Ecological impacts.
- Impact on regional or local plans for fuel, water resources, solid waste, land, air quality and labor force.
- Irreversible/irretrievable commitment of resources and opportunities to reuse and recycle resources (wastes, water).
- Socioeconomic impacts.
- Aesthetic impacts, including visual impacts.

Impact on tribal or other religious practices and sites; and potential impact on community character.

## 5.0 REGULATORY COMPLIANCE

This section should identify the major environmental laws and regulations (federal, state, and local) for which compliance will be necessary prior to implementation of the project. The offeror should discuss the following:

- o Preliminary description of best control technology and practices feasible that would be employed to obtain compliance with identified environmental and occupational requirements.
- o Preliminary assessment of environmental monitoring requirements, and tentative schedule to file for and obtain major permits. (Attach and reference appropriate sections of Environmental Monitoring Plan Outline (see Appendix N) for details)

## 6.0 INFORMATION NECESSARY FOR EVALUATING IMPACTS TO WATER RESOURCES

Previously, the Water Resources Council developed assessments of water resource requirements and water supply availability for any non-nuclear energy technology research and development project under the Federal Non-nuclear Energy Research and Development Act. Since the Water Resource Council is no

longer a functioning body of the Federal Government, water assessments are no longer required. However, because the Clean Coal Technology Program may result in projects for which water resource requirements and water availability may be important issues, the following information should be included in the NEPA documentation prepared for those projects:

1. Provide data on water supply and demand within the geographical area of the proposed project;
2. Provide a discussion on the constraints upon water availability imposed by treaties, compacts, court decree, state water laws, and water rights granted pursuant to state and federal law;
3. Assess the effects of the project on regional water quantity;
4. Provide estimates of cost associated with production and management of the required water supply, and the cost of disposal of waste water generated by the proposed project; and,
5. Provide an assessment of the environmental, social, and economic impact of any change in use of currently utilized water resources that may be required by the proposed project.

If water resource requirements and water availability are not significant issues, information should be included in the NEPA documentation to substantiate this fact.

Appendix K

**COST PROPOSAL FORMAT (SF 1411) AND EXHIBITS**

## INSTRUCTIONS FOR SUBMISSION OF A CONTRACT PRICING PROPOSAL

1. The SF 1411 provides a vehicle for the offeror to submit to the Government a pricing proposal of estimated costs with supporting information, adequately cross-referenced, suitable for detailed analysis. The proposer will submit a cost-element breakdown, using the attached format ("pricing proposal summary") for each phase. Supporting data must be furnished for each cost element, consistent with the proposer's cost accounting system. Separate summary totals covering each phase of the project must be furnished. If agreement(s) has been reached with Government representatives on use of forward pricing rates/factors, identify the agreement, include a copy, and describe its nature. Depending on the proposer's system, breakdowns shall be provided, using the "pricing proposal summary" format, for the following basic elements of cost, as applicable:

Materials - Provide a consolidated price summary of individual material quantities included in the various tasks, orders, or contract line items being proposed and the basis for pricing (vendor quotes, invoice prices, etc.).

Subcontracted Items - Include parts, components, assemblies, and services that are to be produced or performed by others in accordance with offeror's design, specifications, or direction and that are applicable only to the prime contract. For each subcontract over \$500,000, the support should provide a listing by source, item,

quantity, price, type of subcontract, degree of competition, and basis for establishing source and reasonableness of price, as well as the results of review and evaluation of subcontract proposals when required by FAR 15.806.

**Standard Commercial Items** - Consists of items that offeror normally fabricates, in whole or in part, and that are generally stocked in inventory. Provide an appropriate explanation of the basis for pricing. If price is based on cost, provide a cost breakdown; if priced at other than cost, provide justification for exemption from submission of cost or pricing data, as required by FAR 15.804-3(e).

**Interorganizational Transfer (at other than cost)** - Explain pricing method used. (See FAR 31.205-26).

**Raw Material** - Consists of materials in a form or state that requires further processing. Provide priced quantities of items required for the proposal.

**Purchased Parts** - Includes material items not covered above. Provide priced quantities of items required for the proposal.

**Interorganizational Transfer (at cost)** - Include separate breakdown of cost by element.

**Direct Labor** - Provide a time-phased (e.g., monthly, quarterly, etc.) breakdown of labor hours, rates and cost by appropriate category, and furnish bases for estimates.

**Indirect Costs** - Indicate how offeror has computed and applied offeror's indirect costs, including cost breakdowns, and showing trends and budgetary data, to provide a basis for evaluating the reasonableness of proposed rates. Indicate the rates used and provide an appropriate explanation.

**Other Costs** - List all other costs not otherwise included in the categories described above (e.g., special tooling, travel, computer and consultant services, preservation, packaging and packing, spoilage and rework, and Federal excise tax on finished articles) and provide bases for pricing.

**Royalties** - If more than \$250, provide the following information on a separate page for each separate royalty or license fee: name and address of licensor; date of license agreement; patent numbers, patent application serial numbers, or other basis on which the royalty is payable; brief description (including any part or model number of each contract item or component on which the royalty is payable) percentage or dollar rate of royalty per unit price of contract item; number of units; and total dollar amount of royalties. In addition, if specifically requested by the contracting officer, provide copy of the current license agreement and identification of applicable claims of specific patents (See FAR 27.204 and 31.205-37).

Facilities Capital Cost of Money - When the offeror elects to claim facilities capital cost of money as an allowable cost, the offeror must submit Form CASB-CMF and show the calculation of the proposed amount (see FAR 31.205-10).

2. As part of the specific information required, the proposer must submit with the proposal, and clearly identify as such, cost or pricing data as defined at FAR 15.801. In addition, submit with the proposal any information which helps explain the proposer's estimating process including:
  - a. The judgmental factors applied and the mathematical or other methods used in the estimate, including those used in projecting from known data; and
  - b. The nature and amount of any contingencies included in the proposed price.
3. There is a clear distinction between submitting cost or pricing data and merely making available books, records, and other documents without identification. The requirement for submission of cost or pricing data is met when all accurate cost or pricing data reasonably available to the offeror have been submitted, either actually or by specific identification, to the contracting officer or an authorized representative. As later information comes into the proposer's possession, it should be promptly submitted to the contracting officer. The requirement for submission of cost or pricing data continues up to the time of final agreement on price.

4. The proposer must include an index, appropriately referenced, for all cost or pricing data and information accompanying or identified in the proposal. In addition, any future additions and/or revisions, up to the date of agreement on price, must be annotated on a supplemental index.
5. By submitting the proposal, the proposer, if selected for negotiations, grants the contracting officer or an authorized representative the right to examine those books, records, documents, and other supporting data that will permit adequate evaluation of the proposed price. This right may be exercised at any time before award.
6. As soon as practicable after final agreement on price, but before the award resulting from the proposal, the proposer shall, under the conditions stated in FAR 15.804-4 submit a Certificate of Current Cost or Pricing Data.

<b>CONTRACT PRICING PROPOSAL COVER SHEET</b>		1. SOLICITATION CONTRACT/MODIFICATION NO.	FORM APPROVED OMB NO. <b>3090-0116</b>
NOTE: This form is used in contract actions if submission of cost or pricing data is required. (See FAR 15.804-6(b))			
2. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)		3A. NAME AND TITLE OF OFFEROR'S POINT OF CONTACT	3B. TELEPHONE NO.
4. TYPE OF CONTRACT ACTION (Check)			
5. TYPE OF CONTRACT (Check)		6. PROPOSED COST (A+B+C)	
<input type="checkbox"/> FFP <input type="checkbox"/> CPFF <input type="checkbox"/> CPIF <input type="checkbox"/> CPAF <input type="checkbox"/> FPI <input type="checkbox"/> OTHER (Specify)		A. COST \$	B. PROFIT/FEE \$
7. PLACE(S) AND PERIOD(S) OF PERFORMANCE		C. TOTAL \$	
8. List and reference the identification, quantity and total price proposed for each contract line item. A line item cost breakdown supporting this recap is required unless otherwise specified by the Contracting Officer. (Continue on reverse, and then on plain paper, if necessary. Use same headings.)			
A. LINE ITEM NO.	B. IDENTIFICATION	C. QUANTITY	D. TOTAL PRICE
9. PROVIDE NAME, ADDRESS, AND TELEPHONE NUMBER FOR THE FOLLOWING (If available)			
A. CONTRACT ADMINISTRATION OFFICE		B. AUDIT OFFICE	
10. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS WORK? (If "Yes," identify)		11A. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT? (If "Yes," complete Item 11B)	
<input type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> YES <input type="checkbox"/> NO	
12. HAVE YOU BEEN AWARDED ANY CONTRACTS OR SUBCONTRACTS FOR THE SAME OR SIMILAR ITEMS WITHIN THE PAST 3 YEARS? (If "Yes," identify item(s), customer(s) and contract number(s))		13. IS THIS PROPOSAL CONSISTENT WITH YOUR ESTABLISHED ESTIMATING AND ACCOUNTING PRACTICES AND PROCEDURES AND FAR PART 31 COST PRINCIPLES? (If "No," explain)	
<input type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> YES <input type="checkbox"/> NO	
14. COST ACCOUNTING STANDARDS BOARD (CASB) DATA (Public Law 91-379 as amended and FAR PART 30)			
A. WILL THIS CONTRACT ACTION BE SUBJECT TO CASB REGULATIONS? (If "No," explain in proposal)		B. HAVE YOU SUBMITTED A CASB DISCLOSURE STATEMENT (CASB DS-1 or 2)? (If "Yes," specify in proposal the office to which submitted and if determined to be adequate)	
<input type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> YES <input type="checkbox"/> NO	
C. HAVE YOU BEEN NOTIFIED THAT YOU ARE OR MAY BE IN NON-COMPLIANCE WITH YOUR DISCLOSURE STATEMENT OR COST ACCOUNTING STANDARDS? (If "Yes," explain in proposal)		D. IS ANY ASPECT OF THIS PROPOSAL INCONSISTENT WITH YOUR DISCLOSED PRACTICES OR APPLICABLE COST ACCOUNTING STANDARDS? (If "Yes," explain in proposal)	
<input type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> YES <input type="checkbox"/> NO	
This proposal is submitted in response to the RFP contract, modification, etc. in Item 1 and reflects our best estimates and/or actual costs as of this date.			
15. NAME AND TITLE (Type)		16. NAME OF FIRM	
17. SIGNATURE		18. DATE OF SUBMISSION	

# PRICING PROPOSAL SUMMARY

OFFEROR:

DATE:

MATERIAL INTERDIV TRANSFERS OTHER				EST COST	REFERENCE
TOTAL MATERIAL					
MATERIAL OVERHEAD	% RATE	BASE			
DIRECT LABOR TOTAL LABOR HOURS AND COST		HOURS			
LABOR OVERHEAD	% RATE	BASE			
TOTAL LABOR O/H					
SPECIAL TESTING AND SPECIAL EQUIPMENT					
TRAVEL					
SUBCONTRACTS					
TOTAL SUBCONTRACTS					
CONSULTANTS					
TOTAL CONSULTANTS					
OTHER DIRECT COSTS					
TOTAL OTHER DIRECT COSTS					
SUBTOTAL					
G&A	% RATE	BASE			
TOTAL EST. COST EXCLUDING IN-KIND CONTRIBUTIONS					
IN-KIND CONTRIBUTION (from Exhibit F)					
TOTAL PROPOSED COST					

**EXHIBIT B**  
**SUMMARY OF ESCALATION FACTORS**

CATEGORY/ELEMENT	FACTORS BY OFFEROR FISCAL YEAR					
	198X	198X	198X	198X	198X	199X
e.g.						
MATERIAL						
TYPE	X.X%	X.X%	X.X%	X.X%	---	X.X%
LABOR						
TYPE	X.X%	X.X%	X.X%	X.X%	---	X.X%
OTHER						
TYPE	X.X%	X.X%	X.X%	X.X%	---	X.X%

**JUSTIFICATION/RATIONAL**

**MATERIAL** - THE FACTORS ARE BASED ON (NAME) PROJECTION/REPORT AS DETAILED IN THEIR REPORT OF (DATE). COPIES ARE INCLUDED UNDER TAB X PAGE X OF THE COST PROPOSAL.

**LABOR** -     SIMILAR TYPE OF WORDS, REPORTS, REFERENCES ETC.  
**ETC.** -

(Note to offerors: This format may be modified to fit the offeror's circumstances as long as the requested data is provided in a logical format).

Proposing Entity \_\_\_\_\_

Exhibit C  
Page 1 of 3

# FRINGE BENEFIT EXPENSE SCHEDULE

(Examples:)

	Previous two Fiscal Years		Current.	Projected
	(Actuals)*		Fiscal Yr.	FY's**
Sick Leave	\$	\$	\$	\$
Holiday				
Vacation				
Administrative Leave				
Compensation				
Insurance				
Unemployment				
Insurance				
FICA Tax				
Group Insurance				
Training				
Educational Aid				
Employee Pension				
Employee Morale				
Other				
Total Expenses	\$	\$	\$	\$
Base of Distribution	\$	\$	\$	\$
(Identify)				
Expense Rate	%	%	%	%

\* Fiscal year ending \_\_\_\_\_.

\*\* Furnish the basis for the projected costs, with the reasons for the variances between the actuals experienced and the projections.  
Provide a column of data for each projected Fiscal Year (beyond the current Fiscal Year) for the expected period of project demonstration.

Proposing Entity \_\_\_\_\_

Exhibit C  
Page 2 of 3

### OVERHEAD EXPENSE SCHEDULE

(Examples:)	Previous two Fiscal Years		Current	Projected
Salaries and Wages:	(Actuals)*		Fiscal Yr.	FY's**
	\$	\$	\$	\$
Indirect Labor				
Other Compensation				
Overtime Premium				
Sick Leave				
Holiday				
Vacation				
Severance				
Etc.				
Personnel Expenses:				
Compensation				
Insurance				
Unemployment				
Insurance				
FICA Tax				
Group Insurance				
Travel Expense				
Recruiting				
Training				
Employee Pension				
Etc.				
Bid and Proposal				
Supplies and Services:				
General Operating				
Office and Printing				
Utilities				
Etc.				
Fixed Charges:				
Depreciation				
Equipment Rentals				
Etc.				
<hr/>				
Total Expenses	\$ _____	\$ _____	\$ _____	\$ _____
<hr/>				
Base of Distribution	\$ _____	\$ _____	\$ _____	\$ _____
(Identify)	_____	_____	_____	_____
<hr/>				
Overhead Expense Rate	_____ %	_____ %	_____ %	_____ %

\* Fiscal year ending \_\_\_\_\_.

\*\* Furnish the basis for the projected costs, with the reasons for the variances between the actuals experienced and the projections.

Provide a column of data for each projected Fiscal Year (beyond the current Fiscal Year) for the expected period of project demonstration.

## GENERAL &amp; ADMINISTRATIVE EXPENSE SCHEDULE

(Examples:)	Previous two Fiscal Years (Actuals)*	Current Fiscal Yr.	Projected FY's**
<b>Salaries and Wages:</b>			
Indirect Labor	\$ _____	\$ _____	\$ _____
Other Compensation			
Overtime Premium			
Sick Leave			
Holiday			
Vacation			
Severance			
Etc.			
<b>Personnel Expenses:</b>			
Compensation			
Insurance			
Unemployment			
Insurance			
FICA Tax			
Group Insurance			
Travel Expense			
Recruiting			
Training			
Employee Pension			
Etc.			
<b>Bid and Proposal</b>			
<b>Supplies and Services:</b>			
General Operating			
Office and Printing			
Utilities			
Etc.			
<b>Fixed Charges:</b>			
Depreciation			
Equipment Rentals			
Ect.			
<b>Total Expenses</b>	\$ _____	\$ _____	\$ _____
<b>Base of Distribution (Identify)</b>	\$ _____	\$ _____	\$ _____
<b>G&amp;A Expense Rate</b>	% _____	% _____	% _____

\* Fiscal year ending \_\_\_\_\_.

\*\* Furnish the basis for the projected costs, with the reasons for the variances between the actuals experienced and the projections.

Provide a column of data for each projected Fiscal Year (beyond the current Fiscal Year) for the expected period of project demonstration.

NAME & NUMBER	DESCRIPTION	HOURS OF USE		PERCENT OF CAPACITY	
		TOTAL	AGREEMENT	TOTAL	AGREEMENT
<u>FURNISHED</u>					

## EXHIBIT E

(This exhibit uses the WBS developed for the technical proposal as a basis for development of the project's costs estimate. The following is the format to be used for the various Phases of the project. Each Phase should be prepared separately to Task Level 3, in turn.)

### SUMMARY FOR EXHIBIT E

1.0	TOTAL PROJECT COST	amount
1.1	PHASE ONE COST	amount
1.1.1	Task 1 Cost	amount
1.1.2	Task 2 Cost	amount
1.1.3	Task 3 Cost	amount
	(etc.)	
1.2	PHASE TWO COST	amount
	(etc.)	

(For this summary the task amounts should total the Phase amounts and the Phase amounts should total to the Project Cost. Costs which are not a part of a lower level's estimated cost should be identified and estimated in detail at the next higher task level. The Phase and Project totals from this Exhibit should equal the totals for the Phases and the Project in Exhibit A).

### PHASE

(Identify the Phase being estimated)

**WBS TASK**

(Identify the WBS task number (task and subtask level) and provide a short description of the task.)

**Cost Estimate**

(Develop by cost element detail (material, labor (hours, rates), overheads, other direct costs, etc.) the costs for this task. Use the Pricing Proposal Summary as the format for the costs.)

## EXHIBIT F

### COST SHARING ARRANGEMENT

#### Estimated Cost

The total estimated cost for this proposed project is \$\*\*\*\*\*.

#### Cost Sharing

The participant and the Government shares in the proposed costs of this project are as follows:

#### SUMMARY OF THE PROPOSED SHARE OF THE ACTUAL COST OF THE PROJECT

DOLLAR SHARE	PERCENT SHARE
( $\$$ )	(%)
<hr/>	<hr/>

#### PHASE ONE

##### GOVERNMENT

Participant

Cash

Contribution

#### PHASE TWO

##### GOVERNMENT

Participant

Cash

Contribution

**PHASE THREE****GOVERNMENT****Participant****Cash****Contribution****TOTAL PROJECT****GOVERNMENT****Participant****Cash****Contribution**

(The participant share of the total project cost is to be the sum of the participant's cash and in-kind contribution.)

**IDENTIFICATION AND SUPPORT FOR PARTICIPANT'S CASH AND IN-KIND CONTRIBUTIONS**

The participant is to provide the following information for all cash and in-kind contributions proposed for each project phase.

**Phase**

(Phase 1, 2, or 3)

**Type of Cost Share**

(cash, or in-kind contributions)

**Amount and Source of Cash Contribution**

(Actual whole dollar amount and source of funds (e.g., participant, third party, subcontractor, etc.)

For each in-kind contribution, the following additional information must be provided. The information must be verifiable from the participant's records. Provide the information requested which is appropriate for the type of in-kind contribution being proposed.)

Source of In-Kind Contribution

(Participant, subparticipant, third party, etc.)

Description of In-Kind Contribution

(Type (property, equipment, land etc.) of in-kind contribution and brief description of expected use.)

Amount of Use

(Provide the total amount of time the item is available for use and the estimated amount of time the item will be used on/for this project.)

Proposed Value

(State estimated value. The estimated value will be developed following the procedures in OMB Circular 102, Attachment F, Paragraph 5 for state or local government participants, or OMB Circular A-110, Attachment E, Paragraph 5 for all other participants.)

Date of Acquisition and Acquisition Cost

(Date when the item was originally purchased and original acquisition cost. Provide documentation to support original acquisition cost stated.)

Depreciation Status

(State if the item is fully depreciated or is currently being depreciated. For fully depreciated equipment or facilities provide evidence to show that it was continuously used during the entire Calendar Year 1984.)

**Depreciation Amount**

(Provide the yearly depreciation schedule and the years during which the depreciation took/takes place.)

Appendix L

**UNIFORM REPORTING SYSTEM FOR FEDERAL ASSISTANCE**

**U.S. Department of Energy**  
**Washington, D.C.**

**ORDER**

DOE 1332. 2

10-31-83

**SUBJECT: UNIFORM REPORTING SYSTEM FOR FEDERAL ASSISTANCE  
(GRANTS AND COOPERATIVE AGREEMENTS)**

---

1. **PURPOSE.** To establish the Department of Energy (DOE) uniform reporting system for Federal assistance and provide implementing instructions, procedures, and formats to be used for all grants and cooperative agreements awarded by the Department.
2. **EXCLUSION.** Excluded from this reporting system are cooperative agreements associated with major system acquisitions as specified in DOE 5700.4, PROJECT MANAGEMENT SYSTEM, of 1-8-81, and the distribution of money managed under HQ 2100.1A, FINANCIAL MANAGEMENT OF MONEY RECEIVED FROM PERSONS WHO HAVE ALLEGEDLY VIOLATED DEPARTMENT OF ENERGY REGULATIONS, of 5-31-81, or any successor.
3. **APPLICABILITY.** This Order provides a compendium of standard forms, procedures, and terminology from which a program or project manager selects those applicable to a specific contractual effort. Reporting requested from contractors shall in all cases be limited to only that information essential for effective management control. Solicitations and awards comply with this Order by inclusion of a completed EIA 459-A, "Federal Assistance Reporting Checklist," with attachments. DOE organizations comply by execution with the requirements set forth in this Order.
  - a. Federal assistance solicitations (as defined on page 2, paragraph 11, of Attachment 1) issued after the publication of this Order shall comply with the requirements set forth in this Order. New grants and cooperative agreements awarded as a result of such Federal assistance solicitations shall also comply with the requirements set forth in this Order.
  - b. Awards of continuation grants and cooperative agreements awarded 90 or more days after the publication of this Order shall also comply with the requirements set forth in this Order.
  - c. For existing grants and cooperative agreements, the requirement will be determined by the cognizant Federal assistance program/project manager and the contracting officer. However, existing grants and cooperative agreements will not be affected by this Order unless the recipient so agrees.
4. **BACKGROUND.** This Order contains direction for DOE personnel on standardized application/proposal baseline plans and performance reports. Federal assistance preapplication and payment are not addressed. Information concerning preapplication and payment processes can be found in Federal circulars, DOE assistance regulations, or the program announcement.

---

**DISTRIBUTION:**  
All Departmental Elements  
Federal Energy Regulatory Commission (info)

**INITIATED BY:**  
Office of Project and  
Facilities Management

5. REFERENCES.

- a. OMB Circular A-40, "Clearances of Public Reporting and Recordkeeping Requirements under the Federal Reports Act," of 5-3-73, as amended, which establishes policy and promulgates regulations to assure continuing effective management of Federal reporting requirements.
- b. OMB Circular A-102, "Uniform Administrative Requirements for Grants-In-Aid to State and Local Governments," of 9-12-77, as amended, which promulgates standards for establishing consistency and uniformity in the administration of grants to State, local, and Indian tribal governments.
- c. OMB Circular A-110, "Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations," of 7-30-76, as amended, which promulgates standards for obtaining consistency and uniformity in the administration of grants to, and other agreements with, public and private institutions of higher learning and hospitals, and other quasi-public and private nonprofit organizations.
- d. DOE 1340.1A, MANAGEMENT OF PUBLIC COMMUNICATIONS PUBLICATIONS AND SCIENTIFIC, TECHNICAL, AND ENGINEERING PUBLICATIONS, of 8-25-82, which prescribes policies, standards, and procedures for effective management of DOE publications.
- e. DOE 1430.1, MANAGING THE DEPARTMENT OF ENERGY'S SCIENTIFIC AND TECHNICAL INFORMATION, of 2-23-83, which defines DOE's responsibility for managing scientific and technical information developed in the Department's research and development programs.
- f. DOE 4600.1, FINANCIAL ASSISTANCE PROCEDURES MANUAL, of 6-10-82, which describes processes and procedures for administering financial assistance award and administration.
- g. DOE 5700.4, PROJECT MANAGEMENT SYSTEM, of 1-8-81, which provides detailed guidance and procedures on implementation of the project management system. It sets forth the principles and requirements which govern the development, approval, and execution of DOE's major system acquisitions and major projects.
- h. Title 5 U.S.C. 552(b)(4), "Freedom of Information Act," of 7-4-66, as amended, which exempts trade secrets and commercial or financial information which is privileged and confidential from public disclosure.
- i. Title 5 CFR 1320, "Controlling Paperwork Burdens on the Public," which serves as the implementing regulation for Public Law 96-511, "Paperwork Reduction Act of 1980," and directs the identification and clearance of information collections levied on the public, including contractors, State and local government units, and persons who perform services for the Department on an individual basis.
- j. Title 44 U.S.C., "Public Printing and Documents," of 10-22-68, which establishes laws related to public printing and documents, including Government Printing Office and other agency efforts, for both in-house and contract efforts.

1. Title 10 CFR 600, "DOE Financial Assistance Rules," of 10-5-82, which codify, implement, and publish uniform assistance policies and selected procedures applicable to the award and administration of DOE grants and cooperative agreements.
- m. Title 41 CFR 101-11.11, "Federal Property Management Regulations," of 7-1-82, revised, which establishes an interagency reports management program, describes policies, and promulgates standards, procedures, and techniques for the economical and efficient management of records of Federal agencies.

6. POLICY AND OBJECTIVES.

- a. It is the Department's policy to acquire uniform, timely, and valid information on costs, schedules, and performance in order to effectively manage programs and projects, and to do so with the least possible burden on DOE and its recipients of Federal assistance awards.
- b. The objectives of the uniform reporting system for Federal assistance are to:
  - (1) Provide the tools for obtaining essential Federal assistance management information,
  - (2) Meet the information needs of several DOE organizations with a minimum number of reporting requirements;
  - (3) Establish uniform procedures, forms, and terminology for collecting and integrating the minimum data required by DOE to manage and monitor its Federal assistance awards;
  - (4) Consolidate and eliminate duplicate forms and requirements that now exist in the Department and overlap the information collection requirements of this Order; and
  - (5) Ensure that DOE managers choose only those uniform reporting system for Federal assistance plans and reports that are essential to the effective management and control of their activities.

7. RESPONSIBILITIES AND AUTHORITIES.

- a. Program Secretarial Officers and Managers of Operations Offices shall:
  - (1) Fully implement the provisions of this Order in their individual areas of responsibility;
  - (2) Appoint an action officer to coordinate the requirements of this Order and furnish the appointee's name to the Director of Project and Facilities Management (MA-22); and

- (3) Assure that all research and development grants and cooperative agreements promulgated or administered under their jurisdiction contain reporting requirement checklists indicating that all scientific and technical information deliverables must be promptly furnished to the Technical Information Center.

b. Program/Project Managers shall:

- (1) Become familiar with the intent and processes of this Order, and choose only those plans and reports that are essential to effective Federal assistance management;
- (2) Prepare a Form EIA-459A, "Federal Assistance Reporting Checklist," to accompany each PR-799A, "Procurement/Financial Assistance Request-Authorization," for each grant or cooperative agreement to be awarded and ensure recipient compliance with this Order; and
- (3) Review, evaluate, and utilize information obtained through plans and reports consistent with this Order for management of their activities.

c. The Assistant Secretary, Management and Administration shall, through the:

(1) Director of Procurement and Assistance Management.

- (a) Ensure that all Federal assistance solicitations contain reference to this Order's requirements.
- (b) Ensure that a clause for implementing this Order is in all Federal assistance award instruments and that the Form EIA-459A, "Federal Assistance Reporting Checklist," is included in the award document.
- (c) Ensure that requests for non-standard management reporting requirements are coordinated with the Director of Project and Facilities Management.
- (d) Aid in ensuring recipient compliance post award.

(2) Controller. Monitor financial status of grant and cooperative agreement awards and advise DOE participants as appropriate.

(3) Director of Administration, shall, through the:

(a) Director of Project and Facilities Management.

- 1 Coordinate the development and monitor implementation of this Order.
- 2 Provide, in coordination with the Director of Personnel, periodic training seminars to Departmental organizations in the implementation of this Order.

- 3 Review and approve for implementation all non-standard management reporting requirements forwarded by the Director of Procurement and Assistance Management.
  - 4 Implement the information collection and clearance requirements contained in Title 5 CFR 1320 as they apply to contractors, their employees, and other members of the public from whom information is collected under the provisions of this directive.
- (b) Director of Personnel. Provide for the inclusion of training on the requirements of this Order in Departmentwide training programs, as appropriate.
- (c) Manager of the Technical Information Center. Develop policies and procedures for managing the Department's scientific and technical information program including the development of procedures and systems needed for assuring the acquisition and receipt of adequate and acceptable scientific and technical information from the uniform reporting system for federal assistance.
- d. Contracting Officers (Awarding Officers) shall:
- (1) Ensure that all Federal assistance solicitations contain reference to this Order's requirements.
  - (2) Ensure that a clause for implementing this Order is in all Federal assistance awards.
  - (3) Review, evaluate, and utilize information obtained through plans and reports consistent with this Order for management of their activities.

BY ORDER OF THE SECRETARY OF ENERGY:



WILLIAM S. HEFFELFINGER  
Director of Administration

### DEFINITIONS

1. ACCRUAL BASIS OF ACCOUNTING. Recognizes revenues in the period earned and recognizes cost in the period incurred, regardless of when payment is received or made. (DOE 2100.1A, GLOSSARY OF FINANCIAL TERMS, of 10-23-81.)
2. ACCRUED COST. Accrued cost is the value (purchase price) of goods and services used or consumed within a given period of time, regardless of when ordered, received, or paid for.
3. ACCRUED EXPENDITURES. Accrued expenditures are the charges incurred by the recipient during a given period requiring the provision of funds for: goods and other tangible property received; services performed by employees, contractors, subgrantees, and other payees; and other amounts becoming owed under programs for which no current services or performance is required such as annuities, insurance claims, and other benefit payments. (OMB Circulars A-102 and A-110.)
4. ACTIVITY. An effort or operation which is conducted over a period of time and results in the accomplishment of a unit of work.
5. APPLIED COST. The value (purchase price) of goods and services used, consumed, given away, lost, or destroyed within a given period of time, regardless of when ordered, received, or paid for. For operating programs, applied cost represents the value of resources consumed or used. For procurement and manufacturing programs, applied cost represents the value of material received or produced. For capital outlay programs, applied cost represents the value of work put in place. For loan activities, applied cost represents assets acquired (even though no resource has been consumed). In the case of appropriations for programs that are essentially operating in nature, equipment is included in applied cost when it is placed in use. For all programs, accrued annual leave is included in applied cost when the leave is earned rather than when taken, even though it may be unfunded at the time; and, depreciation cost and other unfunded costs are included where appropriate. (DOE 2100.1A.)
6. BASELINE. A quantitative expression of projected costs, schedule, or technical progress to serve as a base or standard for measurement during the performance of an effort; the established plan against which the status of resources and the progress of a project can be measured.
7. BUDGET PERIOD. The interval of time, specified in the award, into which a project is divided for budgeting and funding purposes. (10 CFR 600.)
8. CEILING. The negotiated or stated limit applicable to obligations and costs which are set by legislation or arrangement and cannot be exceeded. (DOE 2100.1A.)

9. COST VARIANCE. The difference between the planned cost and the actual cost for work performed. It indicates whether costs are being accrued as planned. On the "Federal Assistance Program/Project Status Report," the cost variance is the difference between planned and actual costs for a specified period of time.
10. DIRECT COST. For the purpose of this Order, direct cost means any cost that can be specifically identified with a particular project or activity, including salaries, travel, equipment, and supplies directly benefitting the project or activity. (10 CFR 600.)
11. FEDERAL ASSISTANCE SOLICITATION. A solicitation is a formal written invitation by DOE for interested organizations or individuals to submit applications for a specified project, effort or objective, by a stated common due date. As used in this Order it includes the following:
  - a. Program regulation;
  - b. Program solicitation;
  - c. Solicitation for cooperative agreement proposals;
  - d. Program opportunity notice;
  - e. Program research and development announcement; and
  - f. Notice of program interest.
12. INDIRECT COST. Indirect costs are those incurred for a common or joint purpose benefiting more than one cost objective, and not readily assignable to the cost objectives specifically benefited, without effort disproportionate to the results achieved. (OMB Circular A-87.)
13. INTERMEDIATE EVENTS. Detailed events which are necessary for and lead to the completion of a milestone. An intermediate event signals completion of a subtask crucial to the milestone effort.
14. MILESTONE. An important or critical event that must occur in order to achieve the project objective(s).
15. OBJECTIVE. A general, comprehensive statement of a desired end. From this statement specific goals can be generated.
16. PROGRAM. An organized set of activities directed toward a common purpose, objective, or goal undertaken or proposed by DOE in order to carry out responsibilities assigned to it. It is characterized by a plan of action designed to accomplish a definite objective.

17. PROGRAM/PROJECT MANAGER. An official in the program division or field organization who has been assigned responsibility for accomplishing a specific set of program objectives. This involves planning, directing, and controlling one or more assistance activities, initiation of any award processes necessary to get assistance activities started, and monitoring of assistance activities.
18. PROJECT. For the purpose of this Order a project means the set of activities described in an application, State plan, or other document that is approved by DOE for financial assistance (whether such financial assistance represents all or only a portion of the support necessary to carry out those activities). (10 CFR 600.)
19. RECIPIENT. An inclusive term for all agencies, governments, other organizations, and individuals receiving Federal assistance in the form of grants or cooperative agreements from DOE.
20. TASK. Any definable unit of work. It must have an identifiable start and ending and usually produces some recognizable result.
21. WORK BREAKDOWN STRUCTURE (WBS). A product oriented task hierarchy of all work to be performed in accomplishing project objectives. The product(s) may be hardware, software, support services, tests, documentation, or other quantified elements of the project objectives. The task hierarchy has, as its first level, the major end item of the project. The successive levels provide increasingly detailed definition of the individual work tasks that contribute to the production of end items. The scope and number of levels in the task hierarchy depend on the scope and complexity of the individual project.
22. WORK BREAKDOWN STRUCTURE ELEMENT. Any of the individual items or entries in the WBS hierarchy, regardless of level.

## TABLE OF CONTENTS

	<u>Page</u>
<u>CHAPTER I - INTRODUCTION</u>	
1. System Features.....	I-1
a. Standard Forms and Procedures.....	I-1
b. Standard Definitions.....	I-1
c. Specification of Reporting Requirements.....	I-1
d. Planning Baselines.....	I-1
e. Flexible Reporting Methods and Applications.....	I-1
f. Single Reporting for Multiple Uses.....	I-1
g. Formal Problem Identification.....	I-1
2. How the Uniform Reporting System Works.....	I-1
Figure I-1 Relationship of System Components.....	I-2
3. Key Definitions.....	I-4
a. Federal Assistance.....	I-4
b. Grant.....	I-4
c. Cooperative Agreement.....	I-4
4. Directing Application.....	I-4
5. Application.....	I-5
6. Forms.....	I-5
a. Baseline Plans.....	I-5
b. Status Reports.....	I-5
c. Technical Information Reports.....	I-6
7. Other Information.....	I-6
a. Confidentiality Statement.....	I-6
b. Government Printing Regulations.....	I-7
c. Applicability to Other Government Agencies.....	I-7
d. Paperwork Reduction Act.....	I-7
e. Forms Supplies.....	I-7
<u>CHAPTER II - PROGRAM MANAGEMENT REPORTING</u>	
1. How to Select Plans and Reports.....	II-1
a. General.....	II-1
b. When Reports are Due.....	II-1
Figure II-1 Frequency Codes for Submittal of Reports.....	II-2
c. Distribution of Reports.....	II-2
d. Selection Guides for Baseline Plans and Reports.....	II-3
e. Preparing the Federal Assistance Solicitation to Include Reporting Requirements.....	II-3
Figure II-2 Selection Guides for Plans and Reports.....	II-4
f. Preparation of the Federal Assistance Reporting Checklist.....	II-5
Figure II-3 Example Federal Assistance Reporting Checklist	II-6
Figure II-4 Example Attachment to Federal Assistance Reporting Checklist.....	II-8

2. How to Prepare Plans and Reports.....	II-5
a. General.....	II-5
b. Structuring of Reporting Elements.....	II-8
Figure II-5 Example Work Breakdown Structure.....	II-10
c. Federal Assistance Milestone Plan (Form EIA-459B).....	II-11
d. Federal Assistance Budget Information Forms (EIA-459C and EIA-459D).....	II-12
Figure II-6 Example Federal Assistance Milestone Plan.....	II-13
Figure II-7 Example Milestone Log.....	II-15
e. Federal Assistance Management Summary Report (Form EIA-459E) as a Baseline Plan.....	II-16
Figure II-8 Example Federal Assistance Budget Information Form (Non-Construction).....	II-17
Figure II-9 Example Federal Assistance Budget Information Form (Construction).....	II-19
Figure II-10 Example Federal Assistance Management Summary Report as a Baseline Plan.....	II-23
f. Federal Assistance Program/Project Status Report (Form EIA-459F). Figure II-11 Example Federal Assistance Program/ Project Status Report.....	II-25
g. Financial Status Report (Standard Form 269).....	II-26
h. Federal Assistance Management Summary Report (Form EIA-459E) as a Status Report.....	II-28
Figure II-12 Example Financial Status Report.....	II-29
Figure II-13 Example Federal Assistance Management Summary Report as a Status Report.....	II-30
Attachment II-1 - Research Project Example.....	II-33
Attachment II-2 - Suggested Federal Assistance Solicitation Description of the Uniform Reporting System for Federal Assistance.....	II-35
	II-45

## CHAPTER III-TECHNICAL INFORMATION REPORTING

1. General.....	III-1
2. Selection of Technical Reports.....	III-2
Figure III-1 Frequency and Distribution of Technical Reports.....	III-3

## CHAPTER I

### INTRODUCTION

#### 1. SYSTEM FEATURES. Primary features are:

- a. Standard Forms and Procedures. Replaces differing reporting forms and procedures previously used by DOE component organizations.
- b. Standard Definitions. Provides uniform terminology and data elements to minimize ambiguity of meaning and intent.
- c. Specification of Reporting Requirements. Provides a checklist to be used to identify all reporting requirements at the time of award. The recipient is encouraged to discuss the requirements before the time of award in order to ensure that they are appropriate.
- d. Planning Baselines. Provides planning forms which can be included in the Federal assistance application or proposal to present the planned approach and desired results.
- e. Flexible Reporting Methods and Application. Provides flexibility in application to ensure that the information requested is relevant to the activity performed. The reporting system can accommodate a variety of programs and assistance awards by tailoring the reporting requirements to fit the activity.
- f. Single Reporting for Multiple Uses. A recipient of Federal assistance submits standard forms only once in each reporting period. One submission serves all Departmental needs.
- g. Formal Problem Identification. Provides recipients with a formal method for identifying problems.

#### 2. HOW THE UNIFORM REPORTING SYSTEM WORKS.

- a. This Order contains the plans and reports of the system. Figure I-1 shows the general relationship of the various system components. To illustrate the utility of the plans and reports, a hypothetical project (partially funded by DOE under a cooperative agreement) using all the program management forms is presented in Chapter II. Chapter III covers technical information reporting requirements. DOE 1430.1 describes the scientific and technical reporting requirements and procedures for a research grant. The DOE Technical Information Center (TIC) will provide further guidance.
- b. Before a Federal assistance solicitation is issued, the DOE program manager determines the information that will be required from the assistance recipient. The information needs of other DOE offices, such as Controller and the awarding office, also should be considered.

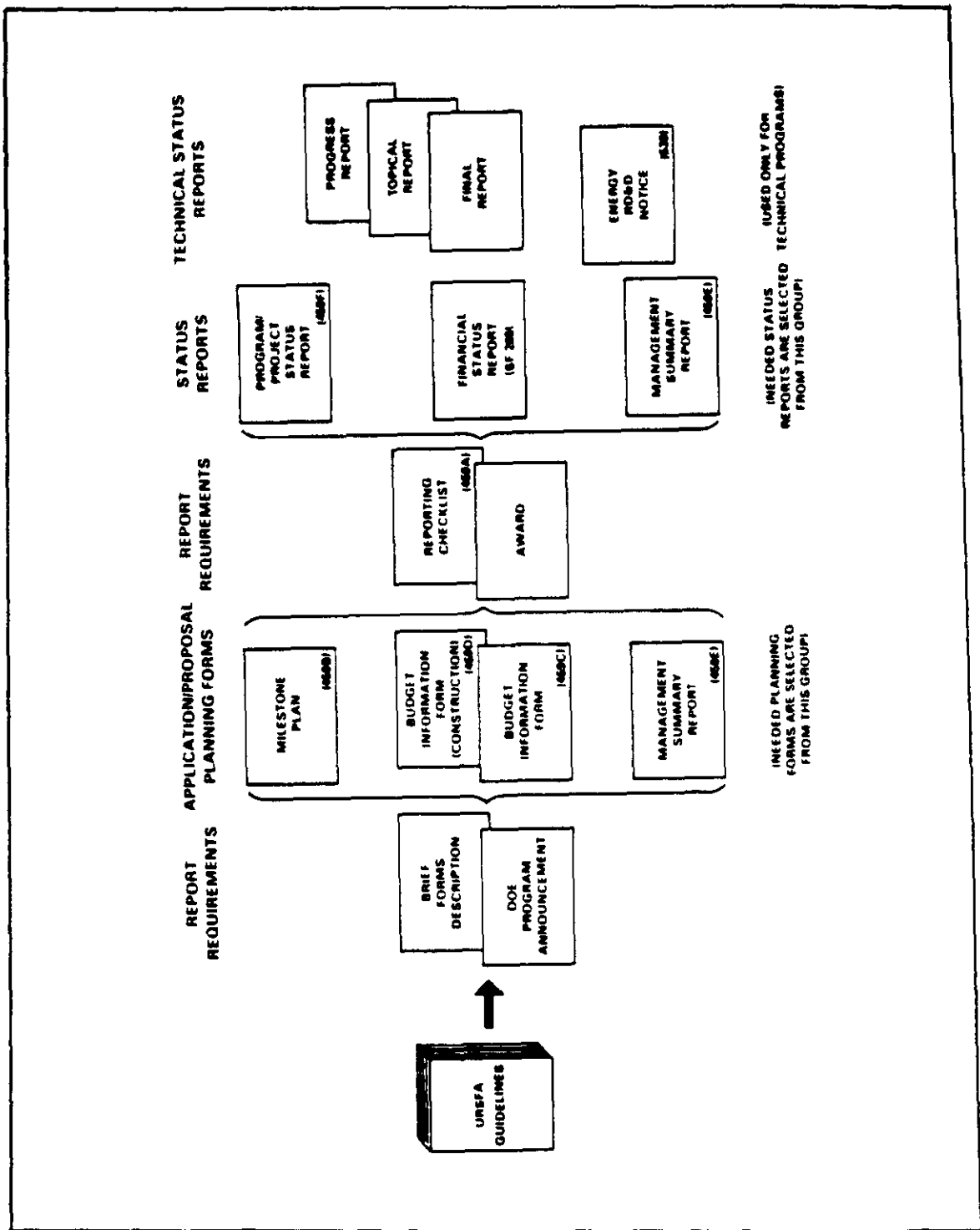


Figure I-1  
Relationship of System Components

- (1) Tables which appear in Chapter II have been developed to indicate those plans and reports which are usually appropriate for different types of activities.
  - (2) Baseline plans shown in this Order can be selected and included as part of the application/proposal for programs which require measurable program performance.
  - (3) The planning technique provided for in this Order is based on *the concept of prescribing specific, quantifiable, and measurable baseline information*. The information presented in the baseline plans is used to augment the narrative, which is usually included in applications and proposals, and to provide a means of evaluating performance. All DOE assistance activities may not require detailed baseline information. A basic research project, for example, may rely on the content of technical information reports for performance evaluation.
  - (4) The status reports and technical reports, which will be required subsequent to award, will be identified in the solicitation. This will allow the applicant/proposer to include reporting costs in the application/proposal.
- c. The application/proposal, containing the required plans selected from this Order, is submitted in accordance with the solicitation. These plans will serve as the base against which progress can be measured.
  - d. The "Federal Assistance Reporting Checklist" is prepared by the DOE program manager and is included as an attachment to the DOE Form 4600.1, "Notice of Financial Assistance Award". The completed checklist indicates the reporting requirements, identifying which, if any, baseline plans should be resubmitted, which other reports are needed, how often they should be submitted, and to whom they should be sent. Any special reporting requirements specified in program legislation, Federal regulations, or the DOE assistance regulations will be identified on the checklist. Alternative forms or formats or alternative data elements that are natural products of the recipient's internal management system may be considered. The recipient's application should include a discussion of any proposed substitutions or changes in the reporting requirements and how the proposed substitution or change meets this Order's report requirements. These proposals shall be coordinated with the Office of Project and Facilities Management prior to award.
  - e. Financial status reports and program status reports relate directly to the baseline plans and show the financial or schedule status of the activity as well as identifying cost or schedule problems. Standard Form 269, "Financial Status Reports," must generally be submitted (see Footnote 1, Figure II-2, for exceptions); program status reports may be required depending on the nature of the activity.

- f. Technical reports are the basis for the technical performance evaluation by the Department's program managers and the primary method by which the Department makes its scientific and technical results available to contractors and others participating in the program, including the public.
  - g. In accordance with Departmental policy, no reporting requirements (information collections) will be levied by the Department on contractors or other elements of the "public" as defined in Title 5 CFR 1320 unless they have prior clearance under the provisions of Title 5 CFR 1320, and the OMB clearance number (or exemption statement) is shown on the reporting requirement document and related forms.
3. KEY DEFINITIONS. See Attachment 1 for additional definitions.
- a. Federal Assistance. Federal assistance is the transfer of money, property, services, or anything of value to a recipient in order to accomplish a public purpose of support or stimulation authorized by Federal statute, rather than acquisition, by purchase, lease, or barter, of property or services for the direct benefit of the Federal Government. Grants and cooperative agreements are Federal assistance mechanisms. Federal assistance is separate and distinct from Federal procurement, which is governed by different rules and regulations.
  - b. Grant. The transfer of money, property, services, or anything of value to the State or local government or other recipient in order to accomplish a public purpose of support or stimulation authorized by Federal statute, rather than acquisition, by purchase, lease, or barter, of property or services for the direct benefit or use of the Federal Government, and where no substantial involvement is anticipated between the executive Agency, acting for the Federal Government, and the State or local government or other recipient during the performance of the contemplated activity.
  - c. Cooperative Agreement. The instrument used to transfer money, property, services, or anything of value to the State and local government or other recipient to accomplish a public purpose of support or stimulation authorized by Federal statute, rather than acquisition, by purchase, lease or barter, of property or services for the direct benefit or use of the Federal Government, where substantial involvement is anticipated between the executive Agency, acting for the Federal Government, and the State or local government or other recipient during performance of the contemplated activity.
4. DIRECTING APPLICATION. The following is a sample clause which the DOE awarding officer can use in the grant or cooperative agreement to invoke the requirements of this Order.

"The Federal assistance recipient shall prepare and submit (postage prepaid) the plans and reports indicated on the 'Federal Assistance Reporting Checklist' to the addressees and in the number of copies designated on the checklist. Preparation of the specified plans and reports shall be in accordance with the DOE uniform reporting system for Federal assistance. The level of detail the recipient provides in the plans and reports shall be commensurate with the scope and complexity of the task and shall be as delineated in Block 4 (Reporting Requirements) and Block 5 (Special Instructions). The prime recipient shall be responsible for acquiring data from any contractors, or subrecipients, to ensure that data submitted are compatible with the data elements which prime recipients submit to DOE. Plans and reports submitted in compliance with this provision are in addition to any other reporting requirements of the Federal assistance instrument."

5. APPLICATION. These instructions apply to DOE grants and cooperative agreements with State and local governments, nonprofit organizations, institutions of higher education, hospitals, individuals, profit-making organizations, and any other eligible assistance recipients.
6. FORMS. There are three categories of forms: baseline plans; status reports; and technical information reports. The "Federal Assistance Reporting Checklist," contained in each award, is used to identify which will be required for that particular effort. A brief description of the forms follows. More discussion of the baseline plans and reports is included in Chapters II and III.
  - a. Baseline Plans. This Order offers simple planning procedures and forms to augment the narrative project description contained in the application/proposal. Discrete, measurable units of the proposed work are presented in the baseline plans. The baseline plans provide a specific outline of what the assistance recipient intends to do, how it is intended to be accomplished, and the time and cost involved. These baseline plans are developed and submitted with the application/proposal to serve as the standard against which status and progress can be measured during the performance period. The following are baseline planning forms.
    - (1) Form EIA-459B, "The Federal Assistance Milestone Plan," and an accompanying milestone log present a schedule of the planned activity, with major milestones and intermediate events identified.
    - (2) Forms EIA-459C and D (construction or nonconstruction), "The Federal Assistance Budget Information Form," presents the planned costs.
    - (3) Form EIA-459E, "The Federal Assistance Management Summary Report," presents the planned costs and the planned schedule together in a capsulized format.

- b. Status Reports. Provide the performance information required to determine program effectiveness and the information which DOE requires to maintain accountability for public funds. The reports are submitted according to the frequency indicated by the DOE program manager on the "Federal Assistance Reporting Checklist." The reports show actual costs, schedule progress, and total project status to date. When the status reports are compared with the baseline plans, accomplishments can be noted, problems become apparent, and corrective action can be taken. The following are status reports:
- (1) OMB Standard Form 269, "The Financial Status Report," presents funds status information.
  - (2) Form EIA-459E, "The Federal Assistance Management Summary Report," relates planned progress and costs to actual progress and costs in a capsulized format.
  - (3) Form EIA-459F, "The Federal Assistance Program/Project Status Report," presents a brief narrative description of accomplishments, problems, progress, and forecasts.
- c. Technical Information Reports. Scientific and technical information is communicable knowledge or information (unlimited, limited, and classified) resulting from, or pertaining to, the conduct of research and development efforts. This information reports on progress or results of DOE-funded research and development or demonstration and usually is published as Technical reports, journal articles, reprints, theses or dissertations, conference and symposium proceedings, or translations. This may include experimental data, theoretical data, analytical studies, and economic and energy use projections. This information is used by managers, scientists, researchers, and engineers engaged in scientific and technological efforts, and is the basic intellectual resource for and result of such effort. TIC documentation including DOE 1430.1 describes the reporting requirements and procedures for such information and reports. The reports themselves are briefly described in the attachment to Chapter III of this Order.

## 7. OTHER INFORMATION.

- a. Confidentiality Statement. The information required under the various provisions of this Order may be information which is exempt from disclosure to the public under the exemption for trade secrets and confidential commercial information specified in 5 U.S.C. 552(b)(4), of 7-4-66, as amended, or prohibited from public release by 18 U.S.C. 1905, of 9-12-80. DOE will determine whether any information submitted should be withheld from public disclosure in accordance with the provisions of 10 CFR 1004.11, of 1-8-79. By statutory authority, DOE must provide this information when requested to the Congress or any committee of the Congress and the General Accounting Office.

- b. Government Printing Regulations. All reports described herein are subject to 44 U.S.C. and the "Government Printing and Binding Regulations" of the Joint Committee of the Congress of the United States. Additionally, all reports are subject to DOE 1340.1A.
- c. Applicability to Other Government Agencies. The reports herein have been cleared in accordance with 41 CFR 101-11.11.
- d. Paperwork Reduction Act. The information collection requirements contained herein have been cleared through 12-31-83 by the Office of Management and Budget (OMB No. 1901-0261.) Action is underway within the Department to obtain the necessary subsequent clearance for this information collection, in accordance with section 3504 (h) of the Paperwork Reduction Act, 44 U.S.C. 3501, et. seq., and procedures implementing that Act, Title 5 CFR 1320.1, et. seq.
- e. Forms Supplies. Forms herein are available on request from:

U.S. Department of Energy  
Technical Information Center  
Secondary Distribution  
P.O. Box 62  
Oak Ridge, TN 37830

## CHAPTER II

### PROGRAM MANAGEMENT REPORTING

#### 1. HOW TO SELECT PLANS AND REPORTS.

- a. General. When establishing a reporting requirement, each of the following factors should be jointly considered:
- (1) The Activity to be Performed. A major determinant in the selection of plans and reports should be the nature of the work. Program/project managers should consider the scope and characteristics of the activity in making an appropriate selection of baseline plans and reports. As previously indicated, a basic research project, characterized as scientific inquiry with uncertain results, may not show progress on a scheduled basis. On the other hand, certain conservation programs have specific goals, for example, the weatherization of a number of homes for the elderly during a specified period.
  - (2) The Duration and Complexity of the Effort. The extent and complexity of the activity should suggest the kinds of information necessary for DOE either to monitor the activity or to be involved in a responsible manner.
  - (3) The Program Legislation, Federal Regulations, and Guidance. Some DOE program legislation requires specific reporting, controls, and procedures. Program managers and assistance recipients must abide by the statutory and regulatory terms of the program to ensure the collection of essential information.
  - (4) The Significance of the Effort. High interest by the public, Congress, or the Administration will require current and timely information on performance.
  - (5) The Information Requirements of Other DOE Organizations. The data requirements of the Controller and the Director of Procurement and Assistance Management should be identified and satisfied. Any other DOE organizations involved in a stewardship role should identify their data requirement for the program/project manager preparing the reporting requirements.
- b. When Reports are Due. The date for submitting reports is identified for the recipient on the "Federal Assistance Reporting Checklist" in the award. How often a report is submitted can vary with each grant or cooperative agreement, and generally is negotiated prior to award, and is indicated by a letter code in the "frequency" column. The frequency codes for submittal are shown in Figure II-1 unless otherwise specified in the award documentation:

A (As necessary).....	Within 5 calendar days after event.
F (Final).....	Within 90 days of the end of performance on the Federal assistance effort.
X (With proposal or application).....	Accompanying proposal application, or with significant planning changes.
O (One time).....	Within 30 days after award.
M (Monthly).....	Within 20 days after the end of a calendar month (not generally selectable for grants).
Q (Quarterly).....	Within 30 days after the end of a budget period quarter.
S (Semiannually).....	Within 30 days after end of a budget period half year.
Y (Yearly).....	Within 90 days after end of a budget period.

Figure II-1  
Frequency Codes for Submittal of Reports

- c. Distribution of Reports. The finance officer must receive copies of all "Financial Status Reports." The contracting officer must receive copies of all required reports. The DOE program/project manager should be aware of the information needs of other DOE organizations and should make provisions to distribute reports to them. Organizations designated to receive specific reports should be so advised. Insofar as possible, award recipients should not be asked to submit multiple reports to several addressees. However, the "addressees" column of the "Federal Assistance Reporting Checklist" will usually indicate that reports should be submitted as follows (if further distribution is required, the DOE program/project manager should make such distribution):
- (1) To avoid any possible delay, the "Financial Status Report" will often be submitted by the recipient directly to the awarding officer and to the designated DOE finance organization so that costs can be entered into DOE's financial information system. A copy of the report will usually be submitted to the program manager. The DOE program/project manager should provide the assistance recipient with a budget and reporting number for the current DOE fiscal year so that the recipient can include the current budget and reporting number in the remarks section of the "Financial Status Report."

- (2) Other status reports should be submitted to the DOE program manager or to an appropriate addressee in the program organization.
  - (3) The technical report requirements of the DOE Patent Counsel (GC-42) and the Technical Information Center are discussed in Technical Information Center documentation including DOE 1430.1. These requirements should be identified on the checklist.
- d. Selection Guides for Baseline Plans and Reports. The tables presented in Figure II-2 suggest appropriate baseline plans and reports for the types of activity performed under grants and cooperative agreements. These tables are provided only as initial references for DOE program managers. DOE program managers are expected to apply their specific knowledge of all factors involved to make appropriate report selections. For example:
- (1) Selection may be imposed or limited by legislation.
  - (2) The DOE program manager also must consider alternatives (such as alternative payment reporting) to and restrictions on financial reporting contained in OMB circulars and 10 CFR 600.
  - (3) There are special cases in which more frequent or more detailed reporting may be required. Generally, these are cases in which the recipient has a history of poor performance, is not financially stable, or has a management system which does not meet prescribed standards. In such instances report selection should be accomplished according to procedures established in the DOE 4600.1.
- e. Preparing the Federal Assistance Solicitation to Include Reporting Requirements. After determining which plans and reports are necessary for the activity, the DOE program manager will ensure that the awarding officer incorporates these requirements into the solicitation. The solicitation should contain the program identification number from the catalog of "Federal Domestic Assistance" and identify any relevant program legislation for the applicant/proposer. Blank forms for the required baseline plans should be included in the solicitation as part of the application/proposal package. Additionally, the solicitation should contain a brief description of the required status reports to assist the applicant/proposer in determining the total administrative costs. A brief description of this Order, each baseline plan, and each status report is provided in Attachment II-2. These are offered as suggested descriptions of the system, the plans, and the reports for inclusion in the solicitation where appropriate. The DOE program manager and the awarding officer should work together to develop the solicitation to ensure that baseline plans and status report descriptions, as well as technical information reporting requirements, are included.

Table 1. Selection Guide for Grants

	RESEARCH PROGRAMS	HUMAN RESOURCE DEVELOPMENT PROGRAMS	CONSERVATION & PUBLIC SERVICE PROGRAMS	TECHNOLOGY RESOURCE DEVELOPMENT & PRODUCTION PROGRAMS
Milestone Plan				X
Budget Information Form	X	X	X	X
Management Summary Report			X, Q, F	Q, F
Program/Project Status Report		F	Q, F	Q, F
Financial Status Report	Y, F	Y, F	Q, F	Q, F
Notice of RD&D <sup>1/</sup>	O, Y			O, Y
Technical Progress Report	Y			Y
Technical Topical Report	A			A
Final Technical Report	F			F

Table 2. Selection Guide for Cooperative Agreements

	RESEARCH PROGRAMS	HUMAN RESOURCE DEVELOPMENT PROGRAMS	CONSERVATION & PUBLIC SERVICE PROGRAMS	TECHNOLOGY RESOURCE DEVELOPMENT & PRODUCTION PROGRAMS
Milestone Plan				X, Y
Budget Information Form	X	X	X, Y	X
Management Summary Report			X	M or Q, F
Program/Project Status Report	Y	Y, F	X, Q, F	M or Q, F
Financial Status Report	Y, F	Y, F	Q, F	Q, F
Notice of RD&D <sup>1/</sup>	O, Y		O, F	O, Y
Technical Progress Report	Y			Y
Technical Topical Report	A			A
Final Technical Report	F			F

<sup>1/</sup> A Notice of Energy RD&D must be submitted at the beginning of each project year. (DOE 1340.1)

Figure II-2  
Selection Guides for Plans and Reports

f. Preparation of the Federal Assistance Reporting Checklist.

- (1) The DOE program manager states the anticipated reporting requirements in the solicitation by using a "Federal Assistance Reporting Checklist." The checklist, revised as appropriate, will become a part of the assistance award. The DOE program manager completes a checklist by providing specifics in each of the following areas:
  - (a) Selection of reports;
  - (b) Frequency of reports;
  - (c) Distribution of reports (name/title and address);
  - (d) Number of copies to be submitted; and
  - (e) Special instructions:
    - 1 Budget and reporting number for cost reporting; and
    - 2 Program specific reports, reporting categories, or topical requirements.
- (2) Specific information for preparing a checklist is on the reverse of the form. Addressees to whom reports will be forwarded directly must be provided on an additional page. If more space is needed in item 5, additional pages can be attached. A completed checklist and attachment are shown as Figures II-3 and II-4.
- (3) Two signature blocks are provided on the checklist. The DOE program manager preparing the checklist should sign at item 6. When the preparer of the checklist exceeds the recommended selection, shown in Figure II-2, a review and approval of at least the next level of supervision is required. It is the reviewer's responsibility to ensure that only data necessary for effective program/project management appears as a checklist requirement.

2. HOW TO PREPARE PLANS AND REPORTS.

- a. General. DOE and Office of Management and Budget forms are used for all plans and reports in this Order. Instructions for the preparation of plan and report forms appear on the reverse side of each form. The examples in this Order illustrate those instructions. Although each plan or report addresses different aspects of performance, the following data elements are common to all the forms.
  - (1) Program/Project Identification Number. The award number as it appears on the award, if available.

U.S. DEPARTMENT OF ENERGY FEDERAL ASSISTANCE REPORTING CHECKLIST			
FORM EIA-450A 1/80		FORM APPROVED OAS NO. 1988-0127	
1. Identification Number: Cooperative Agreement DE-FC-01-00RA1234		2. Program/Project Title: Pilot Energy Awareness Training Program	
3. Recipient: Ace Utility Company, Utopia, Illinois			
4. Reporting Requirements:		Frequency	No. of Copies
PROGRAM/PROJECT MANAGEMENT REPORTING			Addressess
<input checked="" type="checkbox"/> Federal Assistance Milestone Plan		X, Y	1
<input checked="" type="checkbox"/> Federal Assistance Budget Information Form		X, Y	1
<input checked="" type="checkbox"/> Federal Assistance Management Summary Report		Q	1
<input checked="" type="checkbox"/> Federal Assistance Program/Project Status Report		Q	1
<input checked="" type="checkbox"/> Financial Status Report, OMB Form 288		Q	1, 1, 1
TECHNICAL INFORMATION REPORTING			
<input type="checkbox"/> Notice of Energy RD&D			
<input type="checkbox"/> Technical Progress Report			
<input type="checkbox"/> Topical Report			
<input type="checkbox"/> Final Technical Report			
<p>FREQUENCY CODES AND DUE DATES.</p> <p>A - As Necessary; within 5 calendar days after events.  F - Final: 90 calendar days after the performance of the effort ends.  Q - Quarterly; within 30 days after end of calendar quarter or portion thereof.  O - One time after project starts; within 30 days after award.  X - Required with proposals or with the application or with significant planning changes.  Y - Yearly; 30 days after the end of program year (Financial Status Reports 90 days).  S - Semiannually; within 30 days after end of program fiscal half year.</p>			
5. Special Instructions:			
<p>1. No technical reports are required due to the nature of this program.</p> <p>2. A final narrative report summarizing accomplishments and evaluating the program is due 90 days after the program ends.</p> <p>Note: For Q substitute "budget period quarter" for "calendar quarter or portion thereof."  For Y substitute "budget period" for "program year."  For S substitute "budget period" for "program fiscal."</p>			
6. Prepared by: (Signature and Date) 1/15/84 T. J. Noteworthy		7. Reviewed by: (Signature and Date) 1/15/84 M. B. Smith	

Figure II-3  
Example Federal Assistance Reporting Checklist

### FEDERAL ASSISTANCE REPORTING CHECKLIST

#### PURPOSE

This form serves to identify plans and reports selected by DOE as reporting requirements for the Federal Assistance Program/Project.

#### INSTRUCTIONS

- Item 1 — Enter the program /project identification number as it appears in the official award
- Item 2 — Enter the program/project description as it appears in the official award
- Item 3 — Enter the name of the recipient.

Item 4 — Check spaces to indicate plans and reports selected. For each report checked, indicate frequency of delivery in column provided using one of the frequency of delivery codes as shown, as well as the number of copies requested and to whom they should be sent.

Federal Assistance Milestone Plan — presents, with the accompanying Milestone Log, a schedule of the planned activity.

Federal Assistance Budget Information Form — presents the planned costs.

Federal Assistance Management Summary Report — registers planned progress and costs to actual progress and costs in a capsulized format.

Federal Assistance Program/Project Status Report — periodically reports project status, explains variances and problems, and discusses any other areas of concern or achievements.

Financial Status Report, OMB Form 269 — presents the status of funds committed to the project.

Notice of energy R&D Project — provides information on unclassified DOE R&D Project for dissemination to the scientific, technical, and industrial communities and to the public. Also provides information to the Smithsonian Information Exchange and to the DOE Technical Information Center.

Technical Progress Report — periodically reports progress and/or results of DOE supported R&D and scientific projects covering a specific reporting period

Topical Report — presents the technical results of work performed on a specific phase of a project.

Final Technical Report — presents a technical accounting of the total work performed on a project.

Frequency Codes - Each code represents a specific reporting frequency (such as Quarterly). These time periods are suggested in the program announcement and negotiated at the time of the award.

Item 5 — Identify any special reporting requirements or instructions not identified in Item 4. (Use additional sheets as necessary.).

Item 6 — Signature of person preparing the checklist and the date prepared. Preparation is by person responsible for program solicitation.

Item 7 — Signature of the person reviewing the checklist and date reviewed.

Figure II-3 (Continued)  
Federal Assistance Reporting Checklist (Reverse Side)

Report Distribution List	
A.	T. J. Noteworthy, Program Manager San Francisco Operations Office U.S. Department of Energy 1333 Broadway Oakland, California 94612
B.	S. F. Gelman, Awarding Officer San Francisco Operations Office U.S. Department of Energy 1333 Broadway Oakland, California 94612
C.	A. D. Bowman, Financial Officer San Francisco Operations Office U.S. Department of Energy 1333 Broadway Oakland, California 94612

Figure II-4

Example Attachment to Federal Assistance Reporting Checklist

- (2) Program/Project Title. The official title as it appears in the award, if available. Otherwise the title should be short and descriptive.
  - (3) The Name of the Proposer/Recipient. This information should appear as it does or would in the award.
  - (4) The Planning or Reporting Period. The period of time covered by the plan or the report, identified by inclusive dates.
  - (5) The Program/Project Start Date. The date identified in the award as the official start date, if available.
- b. Structuring of Reporting Elements. A major facet of management is identifying and organizing the objectives of the work and planning the resources to accomplish them. Before any program begins, the prime objectives as well as the supporting objectives must be carefully determined and defined. All of the objectives must be organized and interrelated to attain the program goals, and the objectives must be communicated to all parties managing the program work.

- (1) The range of DOE Federal assistance programs is broad and diverse. At one extreme are those programs characterized by planning and reporting of discrete, measureable milestones or accomplishments. Examples of these efforts are the number of homes insulated or the number of schools and hospitals which have had energy audits. Other assistance work may not be measurable in terms of quantity. For example, some research activity may only be capable of being monitored on the basis of the quality of technical aspects of the work. Periodic review of technical reports by experts in the specific field or conversations with the researcher are considered acceptable methods for reviewing and evaluating many types of basic research tasks or activities. Some DOE Federal assistance programs are characterized by the absence of predetermined structure. Programs which promote innovation and invention are examples of this type of program.
- (2) The solicitation will describe broad areas of scientific or engineering endeavors which it is in the public interest to fund. In these programs the applicant/proposer will describe the structure of the proposed work. Clearly, it is in the best interest of the applicant/proposer to establish a logical and understandable approach for the work effort, and this Order provides sufficient flexibility to accommodate a wide range of work structures.
- (3) In those cases where a work planning and reporting structure is desired, the DOE program manager will determine the reporting elements which are required to objectively monitor the work for which the recipient is responsible. An explicit description of these reporting elements should be included in the solicitation in order for all applicants/proposers to respond uniformly. This facilitates the review and evaluation of applications/proposals and, later, facilitates the monitoring process by having a reporting standard for measuring progress on similar work.
- (4) A management tool that can assist a manager in organizing the project is the work breakdown structure. For illustration, a work breakdown structure is shown in Figure II-5.
  - (a) Level I refers to the program or project objective. For some programs, DOE will define level I and level II elements on the "Federal Assistance Reporting Checklist." In the example, level I corresponds to "Pilot Energy Awareness Training Program," and is numbered 1.0.
  - (b) Level II consists of the component tasks essential to fulfill the objective. In the example, there are five tasks which must be accomplished in order to establish, conduct and evaluate the "Pilot Energy Awareness Training Program." These level II components are commonly referred to as elements of work and numbered progressively 1.1, 1.2, 1.3, 1.4, and 1.5.

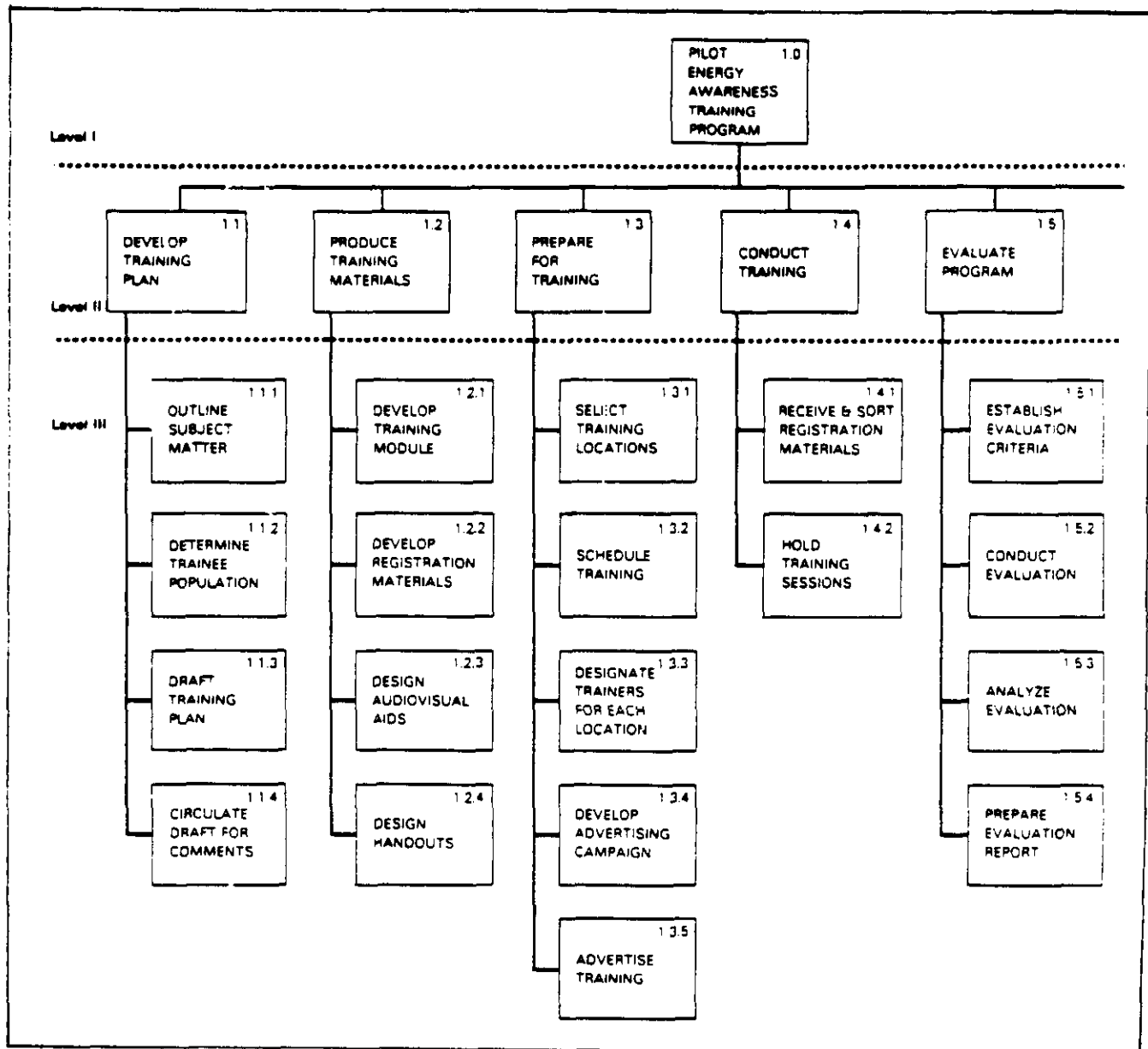


Figure 11-5  
Example Work Breakdown Structure

- (c) Level III outlines the subtasks necessary for the completion of the level II tasks. For example, in order to "Produce Training Materials" (1.2), there are four subtasks which need to be performed. These are numbered 1.2.1, 1.2.2, 1.2.3, and 1.2.4. These subtasks are not necessarily a sequential ordering of work to be performed, but represent a breakdown of the level II task.

c. Federal Assistance Milestone Plan (Form EIA-459B).

(1) Purpose.

- (a) The "Federal Assistance Milestone Plan" presents the schedule for the planned work. The plan establishes the recipient's time schedule for accomplishing the planned events and milestones for each reporting element identified in the solicitation. The form is normally accompanied by a "Milestone Log" with the planned completion date of each item.
- (b) Standard DOE charting symbols and charting conventions described on the reverse side of the form are used to chart the intermediate events and milestones. Detailed preparation instructions appear on the reverse side of the form. Intermediate events and critical milestones are further identified in an attached "Milestone Log," and include the identification number, descriptive name of the event or milestone, and the scheduled date of completion. A sample "Federal Assistance Milestone Plan" and a companion "Milestone Log" are shown at Figures II-6 and II-7.

- (2) General Instructions. The plan will be prepared to the level of detail specified in the solicitation. A schedule should be developed for the total effort from start to finish. The plan should provide more detail in the current year and less detail for later years.

(3) Discussion of the Example, Figure II-6.

- (a) Item 6 - Identification Number. The identification number is a milestone reference number given to the task by the recipient or taken from the work breakdown structure. In this example, the milestone identification numbers correspond to the numbers given to the work breakdown structure elements.
- (b) Item 7 - Planning Category (Work Breakdown Structure Tasks). A short descriptive title is entered for each activity. In the example, the titles correspond to the work breakdown structure elements.
- (c) Item 8 - Program/Project Duration. The block extending left to right represent convenient units of time which cover the duration of the work effort. In this example, the first month of planned activity is April, identified by an "A" in the first block.

- (d) Item 9 - Comments. This column is provided for the convenience of the planner and allows the addition of any comments, notes, names of performers or subgrantees, or other appropriate items. For task 1.4, there is a comment that 30 seminars will be conducted.
- (4) Discussion of the Example, Figure II-7.
- (a) The purpose of the "Milestone Log" is to list the events and milestones which are depicted on the Federal Assistance Milestone Plan. Also there are columns for the planned and actual occurrence dates for each of the events listed.
  - (b) For example, activity 1.1 on the "Federal Assistance Milestone Plan" has three events occurring during its duration. "Draft Training Plan Prepared" (1.1A), "Draft Circulated for Comments" (1.1B), and "Approved Training Plan Completed" (1.1). The planned occurrence dates for these events are 4-30-81, 5-14-81, and 5-29-81, respectively. Since the "Milestone Log" is not used as a required status report, the "Actual Completion Date" column is for the convenience of the user only.
- d. Federal Assistance Budget Information Forms (Forms EIA-459C and EIA-459D).
- (1) Purpose. Either the construction or nonconstruction "Federal Assistance Budget Information Form" is used to establish the planned budget for the complete effort. It is usually submitted in the application or proposal to provide basic cost information for the assistance award. The cost information provided should represent a well prepared cost plan for the total effort.
  - (2) General Instructions.
    - (a) Before the "Federal Assistance Budget Information Form" can be completed, the planned schedule or activity should be examined to determine what resources (manpower, materials, and/or facilities) will be required to accomplish the work. The cost of these can be projected against the schedule of activities. The cost can be planned on a monthly, quarterly, or annual basis and totaled on the "Federal Assistance Budget Information Form." An example of a complete "Federal Assistance Budget Information Form" for projects which do not involve construction or land is shown at Figure II-8.
    - (b) If the major purpose of the effort is construction, land acquisition, or land development, and the application is for \$10,000 or greater, the "Federal Assistance Budget Information Form" for construction should be used. This form is shown in Figure II-9. (Note that the example data is unrelated to the hypothetical training program which does not involve construction.) Otherwise, if the application is for less than \$10,000 and does not require

Figure II-6  
Example Federal Assistance Milestone Plan

**IF THIS FORM IS USED AS A PLAN:**

No grant or cooperative agreement may be awarded unless a completed application has been received DOE Organizational Act, P. 95-91 42 USC 7704 and Federal Grant and Cooperative Agreement Act of 1977 P. 95-274 41 USC 508.

**IF THIS FORM IS USED AS A REPORT:**

No further monies or other benefits may be paid out under this program unless this report is completed and filed as required by existing law and regulations DOE Organizational Act, P. 95-91 42 USC 7704 and Federal Grant and Cooperative Agreement Act of 1977 P. 95-274 41 USC 508.

**SEE DOE (98-0001) FOR PROVISIONS CONCERNING CONFIDENTIALITY OF INFORMATION**

### FEDERAL ASSISTANCE MILESTONE PLAN

**PURPOSE**

The Milestone Plan is used as a planning tool, establishing the time schedule for accomplishing the planned work. Usually, it is accompanied by the Milestones Log.

**INSTRUCTIONS**

Item 1 - Enter the Federal grant or agreement identification number for the current year as it appears in the official award, if known.

Item 2 - Enter the identifying name or description of the program/project, and, if applicable, the project identification number.

Item 3 - Enter the name and address of the performer responsible for managing the task.

Item 4 - Enter the original start date of the program/project.

Item 5 - Enter the official completion date as of the latest modification.

Item 6 - Enter the milestones' identification numbers from the work breakdown structure or as assigned by the DOE program office or managing office.

Item 7 - Enter a brief identifying description of the milestones.

Item 8 - Enter the first letter of each month of the program/project duration in the appropriate boxes if the duration is 24 months or less. Divide the program/project time period up into intervals of two or more months for durations longer than 24 months and enter the first letter of the last month of each interval in the appropriate box.

Item 9 - Enter the name of the organization responsible for performing the work, if different than in Item 4 or any note for clarification of line entries.

Item 10 - Enter any explanatory notes. If more space is required, attach additional sheets and so indicate in this block.

Item 11 - Enter the signature of the Federal Assistance Recipient and the date signed to verify that the information is reasonable, based on knowledge of the project.

Item 12 - Signature of the DOE reviewer and the date signed, which indicates that the information on the plan has been reviewed and appears reasonable.

**CHARTING INFORMATION**

**SYMBOLS**

- △ Major Milestone
- ▽ Intermediate Event (Quarterly Reporting Milestones or Decision Point)
- ▲ Intermediate Event completed early or late
- ◇ Proposed Scheduled Deviation (not or entry for a major milestone)
- Activity Bar
- Dashed Ceiling
- Time Now
- Continue beyond Time frame shown

**EXAMPLES**

A Major milestones with an activity bar

B Time now and work done

C Schedule Deviation (not yet approved)

D First change approved (approved)

E Improvement, not contractually implemented

F First change approved (implemented)

G Activity ahead of schedule

H Activity behind schedule

I Use and on time completion of interim data events A and B respectively

J Same as Example I above except that there is a time bar in place of an activity bar

K Original major milestone date and four subsequent approved changes (all the original major milestones date and two subsequent approved changes are the same one implemented in the past)

L Intermediate event schedule deviation

Figure II-6 (continued)  
Federal Assistance Milestone Plan (Reverse Side)

MILESTONE LOG				Pilot Energy Awareness Training Program Program/Project Title
Ident. No.	Description	Planned Completion Date	Actual Completion Date	Comments
1.1A	Draft Training Plan Prepared	4-30-81		
1.1B	Draft Circulated for Comments	5-14-81		
1.1	Approved Training Plan Completed	5-29-81		
1.2A	Training Modules Developed	7-10-81		
1.2B	Registration Materials Designed	7-17-81		
1.2C	Audio-Visual Aids Designed	7-31-81		
1.2D	Handouts Designed	7-31-81		
1.2	All Training Materials Printed	8-31-81		
1.3A	Training Locations Selected	6-12-81		
1.3B	Training Scheduled	6-26-81		
1.3C	Advertising Campaign Developed	7-17-81		
1.3D	Ads Run in Local Papers	1-08-82		
1.3	Training Preparation Completed	1-08-82		
1.4A	Registration Materials Received and Sorted	1-15-82		
1.4B	Training Sessions Held	1-29-82		
1.4	Training Completed	1-29-82		
1.5A	Evaluation Criteria Established	8-07-82		
1.5B	Evaluation Survey Conducted	2-05-82		
1.5C	Evaluation Data Analyzed	3-05-82		
1.5	Evaluation Report Prepared	3-31-82		

Figure II-7  
Example Milestone Log

clearinghouse approval, an environmental impact statement, or the relocation of persons, businesses or farms, the "Federal Assistance Budget Information Form" for nonconstruction is used (unless the applicant is a State, local or Indian tribal government in which case OMB Circular A-102 specifies the use a "short form application").

(3) Discussion of the Example, Figure II-8.

- (a) Items 1-5. These items display the identifying characteristics of the program/project.
- (b) Section A - Budget Summary. In this section the total budget is presented for the particular project. Since this project pertains to a single Federal assistance program with no functional or activity breakdown, only line 1 is used.
- (c) Section B - Budget Categories. In this section the total budget is presented for each of the cost categories of direct costs with indirect costs computed at a rate agreed upon at the time of award or, in the case of many recipients, predetermined by a single Federal agency assigned the responsibility of negotiating a rate accepted by all Federal Agencies.

e. Federal Assistance Management Summary Report (Form EIA-459E) as a Baseline Plan.

- (1) Purpose. Although the "Federal Assistance Management Summary Report" is used as a status report it can be used as a baseline plan as well. As a planning document, it is a concise, top-level summary of planned costs and schedule. The plan is presented on a single page in a graphic format with supporting data. The graphic format permits rapid visual comparison of cost and schedule. When the period of performance is 12 months or less, and this form is used as a plan, the "Federal Assistance Milestone Plan" need not be used.
- (2) General Instructions.
  - (a) The cost graphs are cumulative presentations, which can present 12 months of work. The cost chart permits the planned costs to be shown in quarterly increments.
  - (b) The milestone portion of this report establishes the recipient's time schedule for accomplishing the planned events and milestones for each reporting element identified in the solicitation. An example of a completed form when it is being used as a plan is shown as Figure II-10.

FEDERAL ASSISTANCE BUDGET INFORMATION FORM						
FORM EIA-456C (10/80)					FORM APPROVED OMB No. 1900-0127	
1 Program/Project Identification No. DE-EC-01-00RA1234		2 Program/Project Title Pilot Energy Awareness Training Program (P.E.A.T.P.)				
3 Name and Address ACE Utility Company Utopia, Illinois				4 Program/Project Start Date 4/01/81		
				5 Completion Date 3/31/82		
SECTION A - BUDGET SUMMARY						
Grant Program Function or Activity (a)	Federal Catalog No. (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1 P.E.A.T.P.	81.007	\$	\$	\$ 197,300	\$ 97,700	\$ 295,000
2						
3						
4						
5 TOTALS		\$	\$	\$ 197,300	\$ 97,700	\$ 295,000
SECTION B - BUDGET CATEGORIES						
6 Object Class Categories	Grant Program Function or Activity				Total (g)	
	(1) P.E.A.T.P.	(2)	(3)	(4)		
a Personnel	\$ 160,200	\$	\$	\$	\$ 160,200	
b Fringe Benefits	17,500				17,500	
c Travel	30,800				30,800	
d Equipment	4,400				4,400	
e Supplies	8,700				8,700	
f Construction	20,400				20,400	
g Construction	- 0 -				- 0 -	
h Other	- 0 -				- 0 -	
i Total Direct Charges	242,000				242,000	
j Indirect Charges	53,000				53,000	
k TOTALS	\$ 295,000	\$	\$	\$	\$ 295,000	
7 Program Reserve	\$ - 0 -	\$	\$	\$	\$ - 0 -	

Figure II-8  
Example Federal Assistance Budget Information Form  
(Non-Construction)

## FEDERAL ASSISTANCE BUDGET INFORMATION FORM

## INSTRUCTIONS

- Item 1 Enter the Federal Grant or agreement identification number for the current year as it appears in the official award, if known.
- Item 2 Enter the Program/Project official title as it appears in the award.
- Item 3 Enter name and address of the agency or office responsible for coordination and administration of the Program/Project.
- Item 4 Enter the official start date.
- Item 5 Enter the official completion date as of the latest official modification.

**Section A. Budget Summary**  
Lines 1-4 Columns (a) and (b)

For applications pertaining to a single Federal grant program (Federal Domestic Assistance Catalog number) and not requiring a functional or activity breakdown, enter on Line 1 under Column (a) the catalog program title and the catalog number in Column (b).

For applications pertaining to a single program requiring budget amounts by multiple functions or activities, enter the name of each activity or function on each line in Column (a) and enter the catalog number in Column (b). For applications pertaining to multiple programs where none of the programs require a breakdown by function or activity, enter the catalog program title on each line in Column (a) and the respective catalog number on each line in Column (b).

For applications pertaining to multiple programs where one or more programs require a breakdown by function or activity, prepare a separate sheet for each program requiring the breakdown. Additional sheets should be used when one form does not provide adequate space for all breakdown of data required. However, when more than one sheet is used, the first page should provide the summary totals by programs.

Lines 1-4 Columns (c) through (g)

For new applications, leave Columns (c) and (d) blank. For each line entry in Columns (a) and (b), enter in Columns (e), (f), and (g) the appropriate amounts of funds needed to support the project.

For continuing grant program applications, submit these forms before the end of each funding year, if required by Program Manager. Enter in Columns (c) and (d) the estimated amounts of funds which will remain unobligated at the end of the grant funding period only if the award instructions provide for this. Otherwise, leave these columns blank. Enter in Columns (e) and (f) the amount of funds needed for the upcoming period. The amount(s) in

Column (g) should be the sum of the amounts in Columns (e) and (f).

For supplemental grants and changes to existing grants, do not use Columns (c) and (d). Enter in Column (e) the amount of the increase or decrease of Federal funds and enter in Column (f) the amount of increase or decrease of non-Federal funds. In Column (g) enter the new total budgeted amount (Federal and non-Federal) which includes the total previous authorized budgeted amounts plus or minus, as appropriate, the amounts shown in Columns (e) and (f). The amount(s) in Column (g) should not equal the sum of the amounts in Columns (e) and (f).

Line 5 — Show the totals for all columns used.

**Section B. Budget Categories**

In the column headings (1) through (4), enter the titles of the same programs, functions, and activities shown on Lines 1-4, Column (a), Section A. When additional sheets were prepared for Section A, provide similar column headings on each sheet. For each program, function or activity, fill in the total requirements for funds (both Federal and non-Federal) by object class categories.

Lines 6a-h — Show the estimated amount for each direct cost budget (object class) category for each column with program, function or activity heading.

Line 6i — Show the totals of Lines 6a to 6h in each column.

Line 6j — Show the amount of indirect cost. Refer to FMC 74-4.

Line 6k — Enter the total of amounts on Lines 6i and 6j. For all applications for new grants and continuation grants the total amount in Column (5), Line 6k, should be the same as the total amount shown in Section A, Column (g), Line 5. For supplemental grants and changes to grants, the total amount of the increase or decrease as shown in Columns (1)-(4), Line 6k, should be the same as the sum of the amounts in Section A, Columns (e) and (f) on Line 5. When additional sheets were prepared, the last two sentences apply only to the first page with summary totals.

Line 7 — Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount. Show under the program narrative statement the nature and source of income. The estimated amount of program income may be considered by the Program Manager in determining the total amount of the grant.

THIS REPORT IS REQUIRED IN ACCORDANCE WITH 42 U.S.C. 7294 AND 40 U.S.C. 471 ET SEQ. FAILURE TO REPORT MAY RESULT IN CONTRACT TERMINATION OR PENALTIES AS PROVIDED BY LAW.

SEE DOE CR 00813 FOR PROVISIONS CONCERNING CONFIDENTIALITY OF INFORMATION.

Figure 11-8 (Continued)  
Federal Assistance Budget Information Form (Reverse Side)  
(Non-Construction)

<b>FEDERAL ASSISTANCE BUDGET INFORMATION FORM (CONSTRUCTION)</b>			
FORM 61A-68B 10/83		FORM APPROVED OMB No. 1550-0127	
1. PROGRAM/PROJECT IDENTIFICATION NO.		2. PROGRAM/PROJECT TITLE	
		Steam Turbine Facility Construction	
3. NAME AND ADDRESS		4. PROGRAM/PROJECT START DATE	
Creative Construction 1000 Development Way Coalville, WV		01/02/83	
		5. COMPLETION DATE	
		01/31/84	
<b>SECTION A - GENERAL</b>			
1. Federal Domestic Assistance Catalog No. _____			
2. Functions or Other Breakout _____ N/A			
<b>SECTION B - CALCULATION OF FEDERAL GRANT</b>			
Cost Classification	Use Only for Revisions		Total Amount Requested
	Latest Approved Amount	Adjustment + or (-)	
1. Administration Expenses	\$	\$	\$ 228,500
2. Preliminary Expenses			68,900
3. Land, Structures, Right-of-way			477,500
4. Architectural Engineering Basic Fees			105,000
5. Other Architectural Engineering Fees			11,000
6. Project Inspection Fees			5,000
7. Land Development			85,000
8. Relocation Expenses			115,000
9. Relocation Payments to Individuals and Businesses			435,000
10. Demolition and Removal			26,000
11. Construction and Project Improvement			965,000
12. Equipment			198,000
13. Miscellaneous			--
14. Total (Lines 1 through 13)			2,719,900
15. Estimated Income (if applicable)			910,000
16. Net Project Amount (Line 14 minus Line 15)			1,809,900
17. Less: Ineligible Exclusions			427,500
18. Add: Contingencies			179,685
19. Total Project Amount (Excluding Rehabilitation Grants)			2,417,085
20. Federal Share Requested of Line 19			850,000
21. Add Rehabilitation Grants Requested (100%)			--
22. Total Federal Grant Requested (Lines 20 & 21)			850,000
23. Grantee Share			1,249,500
24. Other Shares			350,000
25. Total Project (Lines 22, 23 & 24)	\$	\$	\$2,449,500

Figure II-9  
Federal Assistance Budget Information Form  
(Construction)

# FEDERAL ASSISTANCE BUDGET INFORMATION FORM (CONSTRUCTION)

## INSTRUCTIONS

Item 1 - Enter the Federal Grant or agreement identification number for the current year if an award has been made

Item 2 - Enter the Program/Project title

Item 3 - Enter name and address of the agency or office responsible for coordination and administration of the Program/Project

Item 4 - Enter the official start date

Item 5 - Enter the official completion date as of the latest official modification

### Section A - General

1. Show the Federal Domestic Assistance Catalog Number from which the assistance is requested. When more than one program or Catalog Number is involved and the amount cannot be distributed to the Federal grant program or catalog number on an overall percentage basis, prepare a separate set of forms for each program or Catalog Number. However, show the total amounts for all programs in Section B of the basic application form.

2. Show the functional or other categorical breakdowns if required by the Federal grantor agency. Prepare a separate set of forms for each category.

### Section B - Calculation of Federal Grant

When applying for a new grant, use the Total Amount Column only. When requesting revisions of previously awarded amounts, use all columns.

Line 1 - Enter amounts needed for administration expenses including such items as travel, legal fees, rental of vehicles and any other expense items expected to be incurred to administer the grant. Include the amount of interest expense when authorized by program legislation and also show this amount under Section E - Remarks.

Line 2 - Enter amounts pertaining to the work of locating and designing, making surveys and maps, sinking test holes, and all other work required prior to actual construction.

Line 3 - Enter amounts directly associated with the acquisition of land, existing structures, and related right-of-way.

Line 4 - Enter basic fees for architectural engineering services.

Line 5 - Enter amounts for other architectural engineering services, such as surveys, tests, and borings.

Line 6 - Enter fees for inspection and audit of construction and related programs.

Line 7 - Enter amounts associated with the development of land where the primary purpose of the grant is land improvement. Site work normally associated with major construction should be excluded from this category and shown on Line 11.

Line 8 - Enter the dollar amounts needed to provide relocation advisory assistance, and the net amounts for replacement (last resort) housing. Do not include relocation administration expenses on this Line; include them on Line 1.

Line 9 - Enter the estimated amount of relocation payments to be made to displaced persons, business concerns and non-profit organizations for moving expenses and replacement housing.

Line 10 - Enter the gross salaries and wages of employees of the grantee who will be directly engaged in performing demolition or removal of structures from developed land. This Line should show also the cost of demolition or removal of improvements on developed land under a third party contract. Reduce the cost of this Line by the amount of expected proceeds from the sale of salvage if so instructed by the Federal grantor agency. Otherwise, show the proceeds on Line 15.

Line 11 - Enter amounts for the actual construction of, addition to, or restoration of a facility. Also include in this category the amounts of project improvements such as sewers, streets, landscaping and lighting.

Line 12 - Enter amounts for equipment both fixed and movable exclusive of equipment used for construction. For example, include amounts for permanently attached laboratory tables, built-in audio visual systems, movable desks, chairs, and laboratory equipment.

Line 13 - Enter amounts for items not specifically mentioned above.

Line 14 - Enter the sum of Lines 1-13.

Line 15 - Enter the estimated amount of program income that will be earned during the grant period and applied to the program.

Line 16 - Enter the difference between the amount on Line 14 and the estimated income shown on Line 15.

Line 17 - Enter amounts for those items which are part of the project but not subject to Federal participation (See Section C, Line 26g, Column (1)).

Line 18 - Enter the estimated amount for contingencies. Compute this amount as follows: Subtract from the net project amount shown on Line 16 the ineligible project exclusions shown on Line 17 and the amount which is excluded from the contingency provisions shown in Section C, Line 26g, Column (2). Multiply the computed amount by the percentage factor allowed by the grantor agency in accordance with the Federal program guidance. For those grants which provide for a fixed dollar allowance in lieu of a percentage allowance, enter the dollar amount of this allowance.

Line 19 - Show the total amount of Lines 16, 17, and 18. (This is the amount to which the matching share ratio prescribed in program legislation is applied.)

Line 20 - Show the amount of Federal funds requested exclusive of funds for rehabilitation purposes.

Line 21 - Enter the estimated amounts needed for rehabilitation expense if rehabilitation grants to individuals are made for which grantees are reimbursed 100% by the Federal grantor agency in accordance with program legislation. If the grantee shares in part of this expense show the total amount on Line 13 instead of on Line 21 and explain in Section E - Remarks.

Line 22 - Show the total amount of the Federal grant requested.

Line 23 - Show the amount from Section D, Line 27h.

Line 24 - Show the amount from Section D, Line 28c.

Line 25 - Self-explanatory.

Figure II-9 (Continued)  
Federal Assistance Budget Information Form (Reverse Side)  
(Construction)

FEDERAL ASSISTANCE BUDGET INFORMATION FORM (CONSTRUCTION)		
SECTION C - EXCLUSIONS		
26	Classification	Eligible for Participation (1) Excluded from Contingency Provisions (2)
a.	Land Development	\$ 85,000 \$ -
b.	Relocation Expenses	95,000 20,000
c.	Relocation Payments	150,000 77,500
d.		- -
e.		- -
f.		- -
g.	<b>TOTAL</b>	<b>\$ 330,000 \$ 97,500</b>

SECTION D - PROPOSED METHOD OF FINANCING NON-FEDERAL SHARE		
27	Grantee Share	\$1,249,500
a.	Securities	-
b.	Mortgages	-
c.	Approvements (By Applicant)	975,000
d.	Bonds	274,500
e.	Tax Liens	-
f.	Non-Cash	-
g.	Other (Explain)	-
h.	<b>TOTAL - Grantee Share</b>	<b>1,249,500</b>
28.	Other Shares	350,000
a.	State	350,000
b.	Other	-
c.	<b>Total Other Shares</b>	<b>350,000</b>
29	<b>TOTAL</b>	<b>\$1,599,500</b>

SECTION E - REMARKS	

**INSTRUCTIONS**

**Section C - Exclusions**

Line 26 a-g - Identify and list those costs in Column (1) which are part of the project cost but are not subject to Federal participation because of program legislation or Federal grantor agency instructions. The total amount on Line g should agree with the amount shown on Line 17 of Section B. Show in Column (2) those project costs that are subject to Federal participation but are not eligible for inclusion in the amount used to compute contingency amounts as provided in the Federal grantor agency instructions.

**Section D - Proposed Method of Financing Non-Federal Share**

Line 27 a-g - Show the source of the grantee's share. If cash is not immediately available, specify the actions completed to date and those actions remaining to make cash available under Section E - Remarks. Indicate also the period of time that will be required after execution of the grant agreement to obtain the funds. If there is a non-cash contribution, explain what the contribution will consist of.

Line 27 h - Show the total of Lines 27 a-g. This amount must equal the amount shown in Section B, Line 23.

Line 28 a - Show the amount that will be contributed by a State or state agency, only if the applicant is not a State or a state agency. If there is a non-cash contribution, explain what the contribution will consist of under Section E - Remarks.

Line 28 b - Show the amount that will be contributed from other sources. If there is a non-cash contribution, explain what the contribution will consist of under Section E - Remarks.

Line 28 c - Show the total of Lines 28a and 28b. This amount must be the same as the amount shown in Section B, Line 24.

Line 29 - Enter the totals of Line 27h and Line 28c.

**Section E - Other Remarks**

Make any remarks pertinent to the project and provide any other information required by these instructions or the grantor agency. Attach additional sheets, if necessary.

Figure II-9 (Continued)  
Federal Assistance Budget Information Form  
(Construction)

(3) Discussion of the Example, Figure II-10.

- (a) Item 3 - Reporting Period. When this form is used as a report, this block is used to indicate the reporting period. For programs/projects that are longer than 1 year, the entry in this block corresponds to the planning period in the baseline plan. When the "Federal Assistance Management Summary Report" form is used as a plan and the project is 1 year or less long, the block need not be filled in. If the project is more than 1 year long, and this form is used as a plan, the block should show total project duration. Since this example is only for 1 year, the block has not been filled in.
- (b) Item 7 - Fiscal Year. Recipient uses this block for the current Government Fiscal Year identification when reporting status. This block is not used when the form is used as a plan.
- (c) Item 8 - Months or Quarters. The time schedule can be identified by months or quarters. In the example, the first quarter of the budget period is identified in the first 3 blocks with "1st". Note that the quarters are true calendar quarters. The months also are indicated with the first character of the month's name.
- (d) Item 9 - Cost Status. The dollar scale is expressed in units of a thousand, as noted. A total dollar value for the budget period is represented by a solid line at the planned ceiling of \$295,000. Planned cost figures, entered at the base of the graph in the blocks provided, are cumulative and are entered in the last block for each quarter. On the graph, the quarterly points are plotted at the end of each quarter. For the first quarter, "58" is entered in the "J" column to indicate total planned costs up to the end of the first quarter. A broken line joining the points depicts planned costs over time.
- (e) Item 10 - Cost Chart. This section allows the recipient to show the breakout of funds among two to four possible fund sources or by activity as presented on the "Federal Assistance Milestone Plan." Blocks are provided for total planned and actual costs for each quarter, cumulative to date, and the fiscal year. A block is provided to identify the variance between the total planned and total actual costs per quarter. A block is also provided for total planned costs for all project years.
- (f) Item 11 - Major Milestone Status. The milestones are entered with an identification number and short descriptive title. If appropriate, line entries should show an estimated number of units planned for completion in the column titled "Units Planned/Units Completed." The example indicates that 30 seminars are planned to be completed during the project. When quantification of results is not possible, such as for the last milestone "1.5 Prepare Evaluation Report," no unit measure should be entered. The activity bar indicates the interval of time planned for performing the task, using the same schedule shown in item 8, above.

Figure II-10  
Example Federal Assistance Management Summary Report  
as a Baseline Plan

If this form is used as a report:  
No further notices or other business may be sent out under this program.  
unless the DOE has been notified and approved by the DOE. This form is  
registered under DOE Order 486.1, P. 96.31. 41 USC 2754 and Federal  
Government Contracting Agreement Act of 1937, P. 96.224. 41 USC 50b.

If this form is used as a report:  
No grant or cooperative agreement may be awarded under this program  
unless the DOE has been notified and approved by the DOE. This form is  
registered under DOE Order 486.1, P. 96.31. 41 USC 2754 and Federal  
Government Contracting Agreement Act of 1937, P. 96.224. 41 USC 50b.

See DOE Order 486.1 for instructions concerning  
confidentiality of information.

### FEDERAL ASSISTANCE MANAGEMENT SUMMARY REPORT

#### PURPOSE

A graphic presentation of costs and milestones status that provides rapid visual analysis and trend forecasting. The funding levels should represent all available resources.

#### INSTRUCTIONS

Item 1 - Enter the Federal grant or agreement identification number for the current year as it appears in the official award.  
 Item 2 - Enter the program/project official title as it appears in the award and, if applicable, the project identification number.  
 Item 3 - For Baseline Planning - If the program/project duration is 12 months or less, enter the item for durations greater than 12 months. One copy of this form must be completed for each 12 month period funding year within the program/project duration. Enter the beginning and ending dates for the year or plan year for which the costs and activities are to be displayed.  
 For Status Reporting - enter the start and completion dates for the current reporting period.  
 Item 4 - Enter the name and address of the agency or office responsible for managing the project.  
 Item 5 - Enter the official start date of the original agreement.  
 Item 6 - Enter the official completion date as of the latest modification.  
 Item 7 - Enter the current Federal government fiscal year (FY 78).  
 Item 8 - Enter the first letter of each month of the period in the 12 blocks. If reporting by quarter, use three column spaces separated by heavy vertical lines and identify the quarter, such as first quarter and so on.  
 Item 9a - Show the unit of dollars used, such as "hundreds" or "thousands".  
 b - Enter the appropriate dollar scale for the large grid.  
 c - Enter the planned cumulative accrued costs for each month or quarter. Then:  
 • On the grid, use a solid line extending horizontally to show the dollar ceiling. Then,  
 • Enter the actual cumulative accrued costs for each month or quarter for the current reporting period. Then,  
 • Subtract the planned cost from the actual costs for each month or quarter and show the difference (variance). Show the minus amounts in parentheses. Then,  
 • On the grid, use a dashed line to plot the planned cumulative costs by the dollar scale and the month or quarter. Then,  
 • Use a solid line to plot the actual cumulative costs for each month or quarter up to and including the month or quarter being reported. If any cost projection will vary from the planned cost for the remainder of the period, indicate this by a dotted line extending from the solid line.  
 Item 10 - Show planned and actual costs by the source of funding, such as DOE, other Federal agencies (HUD, HEW), state, or other source for each quarter, as well as the cumulative to date and the total funding source. Also show the total planned costs for the life of the program or project.  
 Item 11 - Enter the current period milestones descriptions. Milestones are activities or tasks needed to be completed to accomplish the project's objectives. Milestones are measurable units of work and can be elements from the work breakdown structure. Then,  
 • In the column labeled Units Planned, Completed, show the appropriate figures for the current reporting period. Enter, when quantification is possible, the number of items to be produced, services or acted upon.  
 • Show the milestones graphically using the charting information below.

#### CHARTING INFORMATION

SYMBOLS	EXAMPLES
△ Major Milestone	A Major milestone with an activity bar
▽ Intermediate event (Intermediate Milestone, Support Milestone, or Decision Point)	B Time zone and work done C Schedule Deviation (not yet approved)
▲ Intermediate Event completed early or late	D First change approval (approved)
◇ Proposed Scheduled Deviation late or early for a major Milestone	E Improvement, not contractually implemented F First change approval (improvement)
□ Activity Bar	G Activity ahead of schedule H Activity behind schedule
— Dollar Ceiling	I Line A, in this completion of intermediate milestones A and B, respectively
Time Now	J Same as Example I shows except that here a time line is used in place of an activity bar
] Continue beyond Time frame shown	K Original major milestone date and later subsequent approved changes (if applicable) to that date L Original major milestone date and later subsequent approved changes (if applicable) one improvement to that date M Intermediate event schedule deviation

Figure II-10 (Continued)  
Federal Assistance Management Summary Report (Reverse Side)

f. Federal Assistance Program/Project Status Report (Form EIA-459F).

- (1) Purpose. The "Federal Assistance Program/Project Status Report" is the recipient's concise narrative assessment of the status of the work. This report is used by DOE management to monitor project status and to provide early recognition of potential problem areas.
- (2) General Instructions. This report is used to discuss technical accomplishments, variations from baseline plans or the technical approach, and actual or anticipated problems and actions taken or proposed to resolve them. The recipient also will provide an assessment of the current situation including a forecast of the near future and any impact on project accomplishment. An example of a completed report is shown as Figure II-11.
- (3) Discussion of the Example, Figure II-11.
  - (a) Item 7 - Approach Changes. A brief description of any changes in the work effort should be provided in this section. This would include a description of any technical changes as well as program changes. If more information is necessary, attach additional pages. In the example the box is checked to indicate no changes.
  - (b) Item 8 - Performance Variances, Accomplishments, or Problems. This section should include a discussion of the problems and variances, their causes, and the effects on the project. Any accomplishments during the reporting period should be noted. The example refers to the destruction of the training facility at one of the selected sites, which has an impact on the training seminars conducted, as well as the costs incurred for those seminars.
  - (c) Item 9 - Open Items. This section is used to discuss any items which have not yet been resolved between the recipient and DOE. In the example, discussion of alternative approaches to resolve the schedule deviation and cost underrun situation are stated.
  - (d) Item 10 - Status Assessment and Forecast. This section of the report allows the recipient to present an analysis of the situation. Proposed solutions and expectations of future progress can also be discussed. The example discusses the recipient's recommendation regarding the open item discussed above.
  - (e) Item 11 - Description of Attachments. In the example, one copy of each training module and accompanying training aids have been attached.

Figure II-11  
Example Federal Assistance Program/Project Status Report

No further monies or other benefits may be paid out under this program unless this report is completed and filed as required by existing law and regulations (DOE Organizational Act: PL 95-91 42 USC 7254 and Federal Grant and Cooperative Agreement Act of 1977 PL 95-224 41 USC 508)

See DOE/CRA-0001.3 for provisions concerning confidentiality of information

## FEDERAL ASSISTANCE PROGRAM/PROJECT STATUS REPORT

### PURPOSE

A concise narrative describing the current status of the effort. The report allows Federal assistance recipients to communicate developments, achievements, changes and problems to DOE.

### INSTRUCTIONS

- Item 1 - Enter the Federal grant or agreement identification number for the current year as it appears in the official award.
- Item 2 - Enter the program/project official title as it appears in the award and, if applicable, the project identification number.
- Item 3 - Enter the start and completion dates for the current reporting period.
- Item 4 - Enter the name and address of the recipient office responsible for managing the project.
- Item 5 - Enter the official start date of the original agreement.
- Item 6 - Enter the official completion date as of the latest modification.
- Item 7 - Provide a description of any changes from the work plan, including technical changes, the explanation as to why these changes occurred, and what the impact on performance will be. If there were no changes during the reporting period, check the box for "none."
- Item 8 - Include a discussion of accomplishments, problems and/or variances, their causes and the effects on the effort. If no performance variances, accomplishments, nor problems occurred during the reporting period, check "none."
- Item 9 - Discuss any unresolved issues or items that require action by DOE or recipient. If there are no unresolved issues which require action or coordination, check "none."
- Item 10 - Present analysis of program/project status, proposed solutions to problems, and future expectations regarding the project. If no deviations from the plan are forecast, enter a check in the box provided.
- Item 11 - Provide a short list of program/project related attachments. If no attachments accompany the report, check "none."
- Item 12 - The recipient should sign and date the report so that, if questions arise, they can be directed to the appropriate individual.
- Item 13 - The DOE reviewing representative, usually the DOE program manager responsible for monitoring the program, signs and dates the form to indicate it has been reviewed and appears reasonable.

Figure II-11 (Continued)  
Federal Assistance Program/Project Status Report (Reverse Side)

g. Financial Status Report (Standard Form 269).

- (1) Purpose. The "Financial Status Report" provides information on the status of both Federal and non-Federal funds for all nonconstruction programs and projects. This report provides for separation of the non-Federal share of outlays and unliquidated obligations from the Federal share of funding requirements. (For programs/projects involving construction, refer to OMB Circular No. A-102, Exhibit 4, "Outlay Report and Request for Reimbursement for Construction Programs.")
- (2) General Instructions.
  - (a) Reported costs may be requested on an accrual basis. If the recipient's accounting system does not provide costs on an accrual basis, then a best estimate of accrued cost should be accepted.
  - (b) Specific instructions for completion of the report are provided on the forms. An example of a completed report is shown at Figure 11-12.
- (3) Discussion of the Example, Figure 11-12.
  - (a) Item 7 - Basis. The "cash" or "accrual" block should be marked in accordance with program division policy on reporting accrued costs.
  - (b) Item 8 - Project/Grant Period. The dates entered in this space are the same as those entered on the "Notice of Financial Assistance Award" as completed by DOE.
  - (c) Item 9 - Period Covered by this Report. The dates entered in this space correspond to the time period covered by this report, 7-1-81 to 9-30-81.
  - (d) Item 10 - Status of Funds. The funds expended for the entire work effort are reported in this column. The period covered by this report is for the second quarter of the project. The net outlays for the first quarter are entered on line 10a (\$58,000). The total outlays for this reporting period are entered on line 10b (\$83,000). Line 10e "Net outlays to date," is the summation of the net outlays previously reported and this report period (\$141,000). Line 10f is the non-Federal share of those outlays. Line 10k is the total Federal share of outlays, and line 10l is the Federal share of outlays cumulated to date. Line 10m is the balance of Federal funds and is the difference between lines 10k and 10l.

- (e) Item 11 - Indirect Expense. The method of calculating indirect cost, as specified in the Federal assistance instrument, is indicated in this space. This example indicates that there is a predetermined indirect cost rate of 22 percent and that it is applied to the total amount of direct costs.
- (f) Item 12 - Remarks. This line allows the recipient to refer to other performance reports for more information and to specify the applicable budget and reporting number.

h. Federal Assistance Management Summary Report (Form EIA-459E) as a Status Report.

- (1) Purpose. Use of the "Federal Assistance Management Summary Report" as a baseline plan was described earlier. It is also used as a status report. As such, it provides a concise, top-level summary of performance for cost and schedule against the baseline plan. The data is presented on a single page in graphic format with supporting data. The graphic format permits rapid visual comparison of cost and schedule. The "Federal Assistance Management Summary Report" form is used to report summary status regardless of the forms used in planning.
- (2) General Instructions. The cost graphs are cumulative presentations. The milestone status chart compares planned and actual progress for the same time interval as shown above. Instructions for completing them are provided on the reverse side of each form. An example of a completed form when it is being used as a report is shown as Figure II-13.
- (3) Discussion of the Example, Figure II-13.
  - (a) Item 3 - Reporting Period. The reporting period shown in this example is the second quarter, 7-1-81 through 9-30-81.
  - (b) Item 7 - Fiscal Year. The Government fiscal year (FY) is 1981 at the close of the report, 9-30-81, and is therefore identified here by the recipient as FY 81.
  - (c) Item 8 - Months or Quarters. The time schedule is identified by month, starting with the first month of the budget period, April. The schedule has also been identified by quarter.
  - (d) Item 9 - Cost Status. The dollar scale is expressed in units of a thousand, as noted. A total dollar line is drawn solidly across the chart to show the budget year's planned ceiling of \$295,000. The planned cost line is represented by a dashed line. Actual costs are plotted on the graph as a solid line. In the example, actual costs total \$141,000 to date and the

FINANCIAL STATUS REPORT (Follow instructions on the back)		1 Federal Agency and Organizational Element to which Report is Submitted		2 Federal Grant or Other Identifying Number		OMB Approved No. 5010-106		Page of 1	
3 Recipient Organization (Name and complete address including ZIP code) ACE Utility Company Utopia, Illinois		Department of Energy		DE-FC-01-00RA1234					
4 Employer Identification Number 1082		5 Recipient Account Identifying Number		6 First Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		7 First Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
8 From (Month day year) 4/01/81		9 To (Month day year) 3/31/82		10 Period Covered by this Report From (Month day year) 7/01/81		11 To (Month day year) 9/30/81			
10 STATUS OF FUNDS									
Program/Functional Activity		a) P.E.A.T.P.		b) TOTAL		c) TOTAL			
a. Net Outlays previously reported		58,000		58,000		58,000			
b. Total outlays this report period		83,000		83,000		83,000			
c. Less: Program income credits		-0-		-0-		-0-			
d. Net outlays this report period (Line b minus line c)		83,000		83,000		83,000			
e. Net outlays to date (Line a plus line d)		141,000		141,000		141,000			
f. Less: Non Federal share of outlays		47,000		47,000		47,000			
g. Total Federal share of outlays (Line e minus line f)		94,000		94,000		94,000			
h. Total unliquidated obligations		-0-		-0-		-0-			
i. Less: Non Federal share of unliquidated obligations shown on line h		-0-		-0-		-0-			
j. Federal share of unliquidated obligations		-0-		-0-		-0-			
k. Total Federal share of outlays and unliquidated obligations		197,000		197,000		197,000			
l. Total cumulative amount of Federal funds authorized		103,000		103,000		103,000			
m. Unobligated balance of Federal funds		94,000		94,000		94,000			
11 Indirect Expenses		a. Type of Basis (Place "X" in appropriate box) Provisional <input type="checkbox"/> Fixed <input checked="" type="checkbox"/>		b. Determined <input type="checkbox"/> Fixed <input checked="" type="checkbox"/>		c. Total Amount of Federal Share 19,521		d. Total Amount of Federal Share 9884	
12 Remarks: Attach any necessary explanation or information required by sponsoring Federal Agency in compliance with governing legislation		13 Certification I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes for which the funds were provided.		Signature of Authorized Certifying Official <i>Susan Print</i>		Typed or Printed Name and Title Susan Print, Director		Date Report Submitted 9/30/81	

200 101

STANDARD FORM 200-17-70  
Prescribed by Office of Management and BudgetFigure II-12  
Example Financial Status Report

No later than 10 days before the end of the reporting period, the report is submitted and filed as required by existing DOE and Departmental (DOE) Regulations and 10 CFR 43 USC 7504 and 7505. Grants and Cooperative Agreements Act of 1974, 42 USC 41 USC 5505.

See DOE/OS-1001-1 for complete reporting instructions and instructions.

## INSTRUCTIONS

Please type or print legibly. Items 1, 2, 3, 6, 7, 9, 10d, 10e, 10g, 10i, 10j, 11a, and 12 are self-explanatory; specific instructions for other items are as follows:

Item	Entry	Item	Entry
4	Enter the employer identification number assigned by the U.S. Internal Revenue Service or FICE (institutional code), if required by the Program Manager.	10c	Enter the amount of all program income realized in this period that is required by the terms and conditions of the Federal award to be deducted from total project costs. For reports prepared on a cash basis, enter the amount of cash income received during the reporting period. For reports prepared on an accrual basis, enter the amount of income earned since the beginning of the reporting period. When the terms or conditions allow program income to be added to the total award explain in remarks, the source, amount and disposition of the income.
5	This space is reserved for an account number or other identifying numbers that may be assigned by the recipient.	10f	Enter amount pertaining to the non-Federal share of program outlays included in the amount on line e.
9	Enter the month, day, and year of the beginning and ending of the project period. For formula grants that are not awarded on a project basis, show the grant period.	10h	Enter total amount of unliquidated obligations for the project or program, including unliquidated obligations to subgrantees and contractors. Unliquidated obligations are:  Cash basis—obligations incurred but not paid  Accrued expenditure basis—obligations incurred but for which an outlay has not been recorded.  Do not include any amounts that have been included on lines a through g. On the final report, line h should have a zero balance.
10	The purpose of vertical columns (a) through (i) is to provide financial data for each program, function, and activity in the budget as approved by the Program Manager. If additional columns are needed, use as many additional forms as needed and indicate page number in space provided in upper right, however, the totals of all programs, functions or activities should be shown in column (g) of the first page. For agreements pertaining to several Catalog of Federal Domestic Assistance programs that do not require a further functional or activity classification breakdown, enter under columns (a) through (f) the title of the program. For grants or other assistance agreements containing multiple programs where one or more programs require a further breakdown by function or activity, use a separate form for each program showing the applicable functions or activities in the separate columns. For grants or other assistance agreements containing several functions or activities which are funded from several programs prepare a separate form for each activity or function when requested by the Program Manager.	10i	Enter the Federal share of unliquidated obligations shown on line h. The amount shown on this line should be the difference between the amounts on lines h and i.
10a	Enter the net outlay. This amount should be the same as the amount reported in Line 10a of the last report. If there has been an adjustment to the amount shown previously, please attach explanation. Show zero if this is the initial report.	10k	Enter the sum of the amounts shown on lines g and i. If the report is final, the report should not contain any unliquidated obligations.
10b	Enter the total gross program outlays (less rebates, refunds, and other discounts) for this report period, including disbursements of cash realized as program income. For reports that are prepared on a cash basis, outlays are the sum of actual cash disbursements for goods and services, the amount of indirect expense charged, the value of in-kind contributions applied, and the amount of cash advances and payments made to contractors and subgrantees. For reports prepared on an accrued expenditure basis, outlays are the sum of actual cash disbursements, the amount of indirect expense incurred, the value of in-kind contributions applied, and the net increase (or decrease) in the amounts owed by the recipient for goods and other property received and for services performed by employees, contractors, subgrantees, and other payees.	10m	Enter the unobligated balance of Federal funds. This amount should be the difference between lines k and i.
		11b	Enter rate in effect during the reporting period.
		11c	Enter amount of the base to which the rate was applied.
		11d	Enter total amount of indirect cost charged during the report period.
		11e	Enter amount of the Federal share charged during the report period.  If more than one rate was applied during the project period, include a separate schedule showing bases against which the indirect cost rates were applied, the respective indirect rates, the month, day, and year the indirect rates were in effect, amounts of indirect expense charged to the project and the Federal share of indirect expense charged to the project to date.

Figure II-12 (Continued)  
Financial Status Report (Reverse Side)

"141" point is plotted on the graph. Please note the planned accrued costs from the same period come to the "147" point on the graph. The graph illustrates a cost underrun. It also shows a projected cost line for future quarters based on the recipient's experience to date. The projected cost line is shown as a dotted line joining the planned cost line at 12-31-81. The recipient has projected that actual costs will return to planned cost in the next quarter.

- (e) Item 10 - Cost Chart. This block allows the recipient to display a breakout of funds for the program indicating the contributing sources. If there is only one source of funds, the breakout of funds in item 10 should be by activity, as presented in the milestone plan. In the example, funds are provided by DOE and the ACE Utility Company. The planned amount from each source is entered for each quarter. Also the actual funds required from each fund source are shown to date. Total (planned and actual) for each quarter and cumulative to date are entered at the bottom. Note that the total cumulative to date figures ("141" and "147") correspond to the points plotted on the graph. The variance for both quarters and cumulative to date is also identified.
- (f) Item 11 - Major Milestone Status. This block tracks progress against significant milestones. Progress is indicated by filling the milestone bars with a solid tone to correspond with the progress achieved during the reporting period. The vertical dashed line is a "time now" line and is an indication of the end of the reporting period. The example shows two activities completed, two activities on schedule, and one activity behind schedule. By comparing actual progress to the "time now" line, a quick assessment of schedule status can be made. When the "Federal Assistance Milestone Plan" and "Milestone Log" are also used plans and status shown on this report should correspond.

Figure II-13  
Example Federal Assistance Management Summary Report  
as a Status Report

**Item 1** Enter the Federal grant or agreement identification number for the current year as it appears in the official award.

**Item 2** Enter the program/project official title as it appears in the award and, if applicable, the project identification number.

**Item 3** For Baseline Planning - if the program/project duration is 12 months or less, enter the item. For durations greater than 12 months, one copy of this form must be completed for each 12 month period (funding year) within the program/project duration. Enter the beginning and ending dates for the year or part year for which the costs and activities are to be displayed.

**Item 4** For Status Reporting - enter the start and completion dates for the current reporting period.

**Item 5** Enter the name and address of the agency or office responsible for managing the project.

**Item 6** Enter the official start date of the original agreement.

**Item 7** Enter the official completion date as of the latest modification.

**Item 8** Enter the current Federal government fiscal year (FY 79).

**Item 9** Enter the first letter of each month of the period in the 12 blocks, if reporting by quarters, use three column spaces separated by heavy vertical lines and identify the quarter, such as first quarter and so on.

**Item 9a** Show the unit of dollars used, such as "hundreds" or "thousands".

**Item 9b** Enter the appropriate dollar scale for the large grid.

**Item 9c** Enter the planned cumulative accrued costs for each month or quarter. Then:

- On the grid, use a solid line extending horizontally to show the dollar ceiling. Then:
- Enter the actual cumulative accrued costs for each month or quarter for the current reporting period. Then:
- Subtract the planned cost from the actual costs for each month or quarter and show the difference (variance). Show the minus amounts in parentheses. Then:
- On the grid, use a dashed line to plot the planned cumulative costs by the dollar scale and the month or quarter. Then:
- Use a solid line to plot the actual cumulative costs for each month or quarter up to and including the month or quarter being reported. If any cost projection will vary from the planned cost for the remainder of the period, indicate this by a dotted line extending from the solid line.

**Item 10** Show planned and actual costs by the source of funding, such as DOE, other Federal agencies (DOE, HEW), state, or other sources for each quarter, as well as the cumulative planned and actual costs. Also show the total planned costs for the life of the program or project.

**Item 11** Enter the current reporting period. Then:

- Enter the planned milestones, activities or tasks needed to be completed to accomplish the project's objectives. Milestones are measurable units of work and can be elements from the work breakdown structure. Then:
- In the column labeled Units Planned, Completed, show the appropriate figures for the current reporting period. Enter when quantification is possible, the number of items to be produced, services, or acted upon.
- Show the milestones graphically, using the charting information below.

**SYMBOLS**

- Major Milestone
- Intermediate Event (Deliverable, Supporting Milestone, or Decision Point)
- Intermediate Event completed early or late
- Proposed Scheduled Deviation (late or early) for a major milestone
- Activity Bar
- Dollar Ceiling
- Time Now
- Continues beyond Time frame shown

**CHARTING INFORMATION**

**EXAMPLES**

- Major milestone with an activity bar
- Time now and work done
- Schedule Deviation (not yet approved)
- First change approved (approval)
- Improvement, not contractually implemented
- First change approved (improvement)
- Activity ahead of schedule
- Activity behind schedule
- Line and on time completion of intermediate events A and B, respectively. Same as Example 1 above except that here a time line is used in place of an activity bar.
- Original major milestones date and four subsequent approved changes (all depicted to that date)
- Original major milestones date and two subsequent approved changes (one depicted, one improvement to that date)
- Intermediate event schedule deviation

**Item 12** Enter any brief explanatory remarks regarding schedule deviations. Include details as pertinent in a Project Status Report, if required.

**Item 13** Enter the signature and date of the recipient's activity manager for reference.

**Item 14** Enter the signature of the DOE program manager responsible for monitoring the program/project to verify the plan has been reviewed and appears reasonable. The date of the review should also be entered.

**CERTAIN PROGRAMS MAY REQUIRE ADDITIONAL INSTRUCTIONS WHICH WILL BE ATTACHED TO THIS FORM**

Figure II-13 (Continued)  
Federal Assistance Management Summary Report (Reverse Side)

## RESEARCH PROJECT EXAMPLE

### 1. INTRODUCTION.

- a. This example portrays a research grant from DOE to a university. The project is intended to establish the impact, if any, of the use of four recently developed airfoil designs upon the suppression of blade tip induced noise in large wind driven generators.
- b. The example illustrates the plans and reports which might be submitted on a project of this type. Also included is a discussion of how each plan and report is used in this example.
- c. Figures 1-1 and 1-2 are the "Federal Assistance Reporting Checklist" and "Reports Distribution List," respectively. They illustrate the plans and reports which would be submitted by a recipient of such a research grant and who will be the recipient of those plans and reports.

### 2. DISCUSSION OF EXAMPLES.

#### a. Federal Assistance Budget Information Form (Form EIA 459-C) (Figure 1-3).

- (1) Items 1-5. These items display the identifying characteristics of the program/project.
- (2) Section A - Budget Summary. In this section the total budget is presented for the particular grant program. Since this project pertains to a single Federal grant program with no functional or activity breakdown, only line 1 is used.
- (3) Section B - Budget Categories. In this section the total budget is presented for each of the cost categories of direct costs with indirect costs computed at a rate determined by an agreement between the grantee and the grantor or as a result of an audit of the grantee's operation by the grantor Agency.

#### b. Financial Status Report (Form 269) (Figure 1-4).

- (1) Item 7. The "cash" or "accrual" block should be marked in accordance with program policy on reporting.
- (2) Item 8. The dates entered in this space are the same as those entered on the Notice of Financial Assistance Award prepared by DOE.
- (3) Item 9. The dates entered in the space correspond to the time period covered by this report, 7-1-80 to 6-30-81.

- (4) Item 10. The total funds expended on the research effort are reported in this section. The period covered by this report is the entire life of the project. Therefore, the total costs for this project are entered in line item 10b at \$113,000. The net outlays this report period (line item 10d) and the net outlays to date (line item 10e) are equal to the total outlays this report period (line item 10b). The total Federal share of outlays to date is entered as line item 10g also at \$113,000. Line items 10h through 10j are zero because no other financial commitments have been made to date. Line item 10l is the total amount of Federal funds authorized and is equal to the total Federal share of outlays (line item 10g). Since this report sums all costs on a total project basis, column 10g is the same as column 10a.
  - (5) Item 11. The method of calculating indirect costs, as specified in the Federal assistance instrument, is indicated in this space. This example shows that there is a predetermined indirect cost rate of 40 percent and that it is applied to the total amount of direct costs.
  - (6) Item 12. This line allows the recipient to refer to other performance reports for more information.
- c. Notice of Energy RD&D Project (Form DOE 538) (Figure 1-5). The "Notice of Energy RD&D Project" report is required for all research, development and demonstration efforts except weapon systems. It is submitted shortly after the award is given and updated annually for the duration of the effort. The purpose of this report is to inform the scientific community of research efforts being undertaken.
  - d. University Contractor, Grantee and Cooperative Agreement Recommendations for Announcement and Distribution of Documents (Form DOE RA-427) (Figure 1-6). This form is used by the originator of a technical report to indicate the distribution appropriate for it.

U.S. DEPARTMENT OF ENERGY FEDERAL ASSISTANCE REPORTING CHECKLIST			
FORM EIA-485A (1982)		FORM APPROVED OMB NO. 1900-0127	
1. Identification Number: Grant DE-FG-01-00CS4567		2. Program/Project Title: Noise Suppression In Wind Driven Generators	
3. Recipient: Pierce State University			
4. Reporting Requirements:		Frequency	No. of Copies
PROGRAM/PROJECT MANAGEMENT REPORTING			Addressees
<input type="checkbox"/> Federal Assistance Milestone Plan			
<input checked="" type="checkbox"/> Federal Assistance Budget Information Form		X	1,1,1
<input type="checkbox"/> Federal Assistance Management Summary Report			A,B,C
<input type="checkbox"/> Federal Assistance Program/Project Status Report			
<input checked="" type="checkbox"/> Financial Status Report, OMB Form 269		F	1,1,1
TECHNICAL INFORMATION REPORTING			
<input checked="" type="checkbox"/> Notice of Energy RD&D		O,Y	1,3,1,1
<input checked="" type="checkbox"/> Technical Progress Report		A	1,4,1,1
<input checked="" type="checkbox"/> Topical Report		A	1,4,1,1
<input checked="" type="checkbox"/> Final Technical Report		F	1,4,1,1
FREQUENCY CODES AND DUE DATES.			
A - As Necessary, within 5 calendar days after events.			
F - Final, 90 calendar days after the performance of the effort ends.			
Q - Quarterly, within 30 days after end of calendar quarter or portion thereof			
O - One time after project starts, within 30 days after award.			
X - Required with proposals or with the application or with significant planning changes.			
Y - Yearly, 30 days after the end of program year (Financial Status Reports 90 days)			
S - Semiannually, within 30 days after end of program fiscal half year.			
5. Special Instructions:			
Technical Reports sent to TIC should be in the form of a reproduction master and one copy.			
6. Prepared by: (Signature and Date) 1/30/81 J. S. Anderson <i>J. S. Anderson</i>		7. Reviewed by: (Signature and Date) 2/10/81 C. L. Dixon <i>C. L. Dixon</i>	

Figure 1-1  
Example Federal Assistance Reporting Checklist

Report Distribution List

- A. Cassandra L. Dixon  
Administrative Monitor  
Office of Conversion  
Department of Energy, M.S. 153  
Washington, D.C. 20585
- B. Jason S. Anderson  
Program Manager  
Department of Energy, M.S. 728  
Washington, D.C. 20585
- C. Ad D. Beans  
Financial Officer  
Department of Energy, M.S. 62  
Washington, D.C. 20585
- D. Department of Energy  
Technical Information Center  
P.O. Box 62  
Oak Ridge, TN 37830
- E. Sally Lassar  
Awarding Officer  
Department of Energy, M.S. 1508  
Washington, D.C. 20585
- F. Patent Office  
Department of Energy  
Washington, D.C. 20585

Figure 1-2  
Example Reports Distribution List

## FEDERAL ASSISTANCE BUDGET INFORMATION FORM

FORM EIA-202C  
10/83FORM APPROVED  
OMB No. 1020-0177

1. Grant/Project Identification No. Grant DE-EG-OI-00CS4567		2. Program/Project Title Noise Suppression in Wind Driven Generators	
3. Name and Address Department of Physics Pierce State University, Piedmont, MO 69021		4. Budgetary Project Start Date 7/1/80	
		5. Completion Date 6/30/81	

## SECTION A - BUDGET SUMMARY

Grant Program, Function or Activity (a)	Federal Catalog No. (b)	Estimated Unobligated Funds		Major or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
Research & Dev. Solar	81,037	0	0	113,000	-0-	113,000
2.						
3.						
4.						
5. TOTALS		0	0	113,000	-0-	113,000

## SECTION B - BUDGET CATEGORIES

6. Object Class Categories	7. Grant Program, Function or Activity				Total (g)
	Research & Dev. Solar (a)	(b)	(c)	(d)	
a. Personnel	60,535	0	0	0	60,535
b. Fringe Benefits	6,265				6,265
c. Travel					
d. Equipment	5,200				5,200
e. Supplies	3,714				3,714
f. Construction					
g. Construction	5,000				5,000
h. Other					
i. Total Direct Charges	80,286				80,286
j. Indirect Charges	32,286				32,286
k. TOTALS	113,000	0	0	0	113,000
7. Program Income	0	0	0	0	0

Figure 1-3  
Example Federal Assistance Budget Information Form

FINANCIAL STATUS REPORT (Follow Instructions on the back)									
3 Recipient Organization (Name and complete address, including ZIP code) Pierce State University Piedmont, Missouri 69201		1 Federal Agency and Organizational Element to which Report is Submitted Department of Energy		2 Federal Grant or Other Identifying Number DE-FG-01-00054567		OMB A.D. Processed No. 00 R0180		Page of 1	
4 Employer Identification Number 1001		5 Recipient Account Number 1234		6 Final Report Yes <input type="checkbox"/> No <input type="checkbox"/>		7 Cash <input type="checkbox"/> Accrual <input type="checkbox"/>			
8 Project/Grant Period (See Instructions) From 7/01/80 To 6/30/81		9 Period Covered by this Report From 7/01/80 To 6/30/81		10		11		12	
STATUS OF FUNDS									
10 Programs/Functions/Activities		11 (a) Noise Sup- pression Project		12 (b)		13 (c)		14 (d) TOTAL	
a. Net Outlays previously reported		\$ -0-		\$ -0-		\$ -0-		\$ -0-	
b. Total outlays this report period		113,000		113,000		113,000		113,000	
c. Less: Program income credits		-0-		-0-		-0-		-0-	
d. Net outlays this report period (Line b minus line c)		113,000		113,000		113,000		113,000	
e. Net outlays to date (Line d plus line a)		113,000		113,000		113,000		113,000	
f. Less: Non-Federal share of outlays		-0-		-0-		-0-		-0-	
g. Total Federal share of outlays (Line e minus line f)		113,000		113,000		113,000		113,000	
h. Total unliquidated obligations		-0-		-0-		-0-		-0-	
i. Less: Non-Federal share of unliquidated obligations shown on line h		-0-		-0-		-0-		-0-	
j. Federal share of unliquidated obligations		-0-		-0-		-0-		-0-	
k. Total Federal share of outlays and unliquidated obligations		113,000		113,000		113,000		113,000	
l. Total cumulative amount of Federal funds authorized		113,000		113,000		113,000		113,000	
m. Unobligated balance of Federal funds		-0-		-0-		-0-		-0-	
11. Indirect Expense		Type of Rate (Place "X" in appropriate box) a. Provisional <input type="checkbox"/> b. Final <input checked="" type="checkbox"/>		c. Total Amount 32,286		d. Federal Share 32,286		13 Certification I certify to the best of my knowledge and belief that this report is true and complete and that all outlays and unliquidated obligations are for the purpose set forth in the award documents.	
12. Remarks (Attach any necessary explanation or information required.) BAR 1A-01-4		Signature of Authorized Certifying Official Charles Adams		Typed or Printed Name and Title Charles Adams, Director		Date Report Submitted 7/15/81		Telephone (Area Code, Number and Extension) (402) 370-879	

Figure 1-4  
Example Financial Status Report

FORM DOE 528 (Rev. 10-80)		U.S. DEPARTMENT OF ENERGY <b>NOTICE OF ENERGY RD&amp;D PROJECT</b>		FORM APPROVED DATE NO. 30 8-81-83													
APPROVED FOR USE BY SMITHSONIAN SCIENCE INFORMATION EXCHANGE																	
1. Descriptive title of work <b>CONCEPTUAL DESIGN FOR A COMPLETE PILOT SCALE MHD/STEAM SYSTEM</b>																	
2. Performing organization control number <b>38-88080</b>				3. Contract or grant number <b>FG-AC03-80FE01834</b>													
Work status <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuing <input type="checkbox"/> Terminated																	
4. Contractor's principal investigator/project manager and address where work is performed																	
A. Name (Last, First, MI) <b>DUNDAS, DERRICK</b> B. Phone: FTS- _____																	
C. Research organization business address: Street <b>361 NORTH PEABODY STREET</b> Com. <b>123-4567</b> City <b>ALGODONES</b> State <b>COLORADO</b> Zip <b>94999</b>																	
5. A. Name of performing organization <b>ROCKY MOUNTAIN UNIVERSITY</b> <b>PHYSICS DEPARTMENT</b> (Organization) (Department)																	
B. Mailing address (if different from 4C) _____ C. Circle only one code for TYPE OF ORGANIZATION PERFORMING R&D (See instructions): CU FF IN NP ST TA US XX EG																	
D. Location where the work is being performed _____																	
E. Country sponsoring research _____																	
6. Supporting organization																	
A. Program division or office (Full name) <b>ASSISTANT SECRETARY FOR FOSSIL ENERGY</b>																	
B. Technical monitor (Last, First, MI) <b>WATERS, JAMES T.</b> C. Phone: FTS- <b>252-3000</b>																	
D. Address (if different from DOE Hqs.) _____ Com. <b>202-252-5000</b>																	
E. Administrative monitor (Last, First, MI) <b>PERIWINKLE, GAYLORD G.</b>																	
7. Project schedule																	
A. Start date <b>MAY</b> <b>1980</b> B. Expected completion date <b>APRIL</b> <b>1982</b> (Month) (Year) (Month) (Year)																	
8. Funding in thousands of dollars (Funds represent budget obligations for operating and capital equipment)																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Funding organization(s)</th> <th style="width: 20%;">Current FY</th> <th style="width: 20%;">Next FY</th> </tr> </thead> <tbody> <tr> <td>A. <b>DOE-RA</b></td> <td style="text-align: center;"><b>175</b></td> <td></td> </tr> <tr> <td>B. _____</td> <td></td> <td></td> </tr> <tr> <td>C. _____</td> <td></td> <td></td> </tr> </tbody> </table>						Funding organization(s)	Current FY	Next FY	A. <b>DOE-RA</b>	<b>175</b>		B. _____			C. _____		
Funding organization(s)	Current FY	Next FY															
A. <b>DOE-RA</b>	<b>175</b>																
B. _____																	
C. _____																	
D. For DOE projects, enter budgeting and reporting classification code _____																	
E. Interagency agreement (Specify funding agency) _____																	
F. Agency in-house effort (Check if applicable) <input type="checkbox"/> _____																	
G. EPA "pass-thru" funding (Check if applicable) <input type="checkbox"/> _____																	
Note: Funding Section utilization is optional on Federal Financial Assistance Programs: grants, direct payments, cooperative agreements, loan guarantees, and other related programs.																	
9. Descriptive summary of work (Limit to 200 words. Include objective, approach, results to date and their significance, and expected product. Quantify where possible).  <b>THIS PROJECT IS EXPECTED TO PROVIDE CONCEPTUAL DESIGNS BASED ON EXISTING DATA FOR AN ETF (PILOT-SCALE) PLANT THAT IS A COMPLETE MHD/STEAM SYSTEM. A MAJOR GOAL OF THE ETF IS TO PROVIDE COMPONENT, SUBSYSTEM AND SYSTEM DATA NECESSARY FOR SCALE-UP TO COMMERCIAL, DEMONSTRATION-PLANT SIZES. THE ETF IS TO BE CAPABLE OF TESTING FOR 2000 CONTINUOUS HOURS AT DESIGN CONDITIONS.</b>																	

Figure 1-5  
Example Notice of Energy RD&D Project

<p>10. List the five most descriptive publications in the last year that are available to the public which have resulted from the project (Please give a complete bibliographic citation. Use additional sheets if necessary).</p> <p style="text-align: center; margin-top: 20px;">N/A</p>			
<p>11. General technology categories (Enter applicable code of codes from instructions).</p> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;">A</div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;">1</div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px;"></div> </div>			
<p>12. Type of research activity (Check applicable activities)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A. <input type="checkbox"/> Basic research</p> <p>B. <input type="checkbox"/> Applied research</p> <p>C. <input type="checkbox"/> Laboratory scale R&amp;D</p> <p>D. <input type="checkbox"/> Technology development</p> <p>E. <input type="checkbox"/> Field study</p> <p>F. <input checked="" type="checkbox"/> Pilot plant scale R&amp;D</p> <p>G. <input type="checkbox"/> Full scale demonstration</p> </td> <td style="width: 50%; vertical-align: top;"> <p>H. <input type="checkbox"/> Mathematical model development</p> <p>I. <input type="checkbox"/> Data analysis/assessments</p> <p>J. <input type="checkbox"/> Information systems management</p> <p>K. <input type="checkbox"/> Policy analysis</p> <p>L. <input type="checkbox"/> Socioeconomic</p> <p>M. <input type="checkbox"/> Other (Specify) _____</p> <p>N. <input type="checkbox"/> Not applicable</p> </td> </tr> </table>		<p>A. <input type="checkbox"/> Basic research</p> <p>B. <input type="checkbox"/> Applied research</p> <p>C. <input type="checkbox"/> Laboratory scale R&amp;D</p> <p>D. <input type="checkbox"/> Technology development</p> <p>E. <input type="checkbox"/> Field study</p> <p>F. <input checked="" type="checkbox"/> Pilot plant scale R&amp;D</p> <p>G. <input type="checkbox"/> Full scale demonstration</p>	<p>H. <input type="checkbox"/> Mathematical model development</p> <p>I. <input type="checkbox"/> Data analysis/assessments</p> <p>J. <input type="checkbox"/> Information systems management</p> <p>K. <input type="checkbox"/> Policy analysis</p> <p>L. <input type="checkbox"/> Socioeconomic</p> <p>M. <input type="checkbox"/> Other (Specify) _____</p> <p>N. <input type="checkbox"/> Not applicable</p>
<p>A. <input type="checkbox"/> Basic research</p> <p>B. <input type="checkbox"/> Applied research</p> <p>C. <input type="checkbox"/> Laboratory scale R&amp;D</p> <p>D. <input type="checkbox"/> Technology development</p> <p>E. <input type="checkbox"/> Field study</p> <p>F. <input checked="" type="checkbox"/> Pilot plant scale R&amp;D</p> <p>G. <input type="checkbox"/> Full scale demonstration</p>	<p>H. <input type="checkbox"/> Mathematical model development</p> <p>I. <input type="checkbox"/> Data analysis/assessments</p> <p>J. <input type="checkbox"/> Information systems management</p> <p>K. <input type="checkbox"/> Policy analysis</p> <p>L. <input type="checkbox"/> Socioeconomic</p> <p>M. <input type="checkbox"/> Other (Specify) _____</p> <p>N. <input type="checkbox"/> Not applicable</p>		
<p>13. keywords (Please list 5 keywords).</p> <p>MAGNETO HYDRODYNAMICS</p> <p>STEAM SYSTEMS</p> <p>DEMONSTRATION PLANTS</p> <p>MHD/STEAM SYSTEMS</p> <p>MAGNETICS</p>			
<p>14. Is this research project solely an ANALYTICAL/PAPER STUDY? (Non-experimental, paper and pencil, computer analysis, etc.).</p> <p style="text-align: right;">YES _____ NO <u>X</u></p>			
<p>15. Respondent's Name: <u>DUNDAS, DERRICK</u> Phone No.: <u>998-123-4567</u> Date: <u>May 15, 1980</u></p> <p style="margin-top: 10px;">Street: <u>361 NORTH PEABODY STREET</u></p> <p style="margin-top: 10px;">City: <u>ALGODONES</u> State: <u>COLORADO</u> Zip: <u>94999</u></p>			

Figure 1-5 (continued)  
Example Notice of Energy RD&D Project (Page 2)

DOE Form RA-427 (10/80)	<b>U.S. DEPARTMENT OF ENERGY</b>	OMB NO. 038-R0180
<b>UNIVERSITY CONTRACTOR, GRANTEE AND COOPERATIVE AGREEMENT RECOMMENDATIONS FOR ANNOUNCEMENT AND DISTRIBUTION OF DOCUMENTS</b>		
<i>See Instructions on Reverse Side</i>		
1. DOE Report No. DOE/CS/4567		3. Title Noise Suppression Using Advanced Airfoil Design in High Tip Speed Wind Driven Generators
2. Contract No. Grant DE-FG-01-00CS4567		
4. Type of Document ("X" one) <input checked="" type="checkbox"/> a. Scientific and technical report <input type="checkbox"/> b. Conference paper: Title of conference _____ Date of conference _____ Exact location of conference _____ Sponsoring organization _____ <input type="checkbox"/> c. Other (Specify planning, educational, impact, market, social, economic, thesis, transactions, journal article manuscript, etc.)		
5. Recommended Announcement and Distribution ("X" one) <input checked="" type="checkbox"/> a. DOE's normal announcement and distribution procedures may be followed. <input type="checkbox"/> b. Make available only within DOE and to DOE contractors and other U.S. Government agencies and their contractors.		
6. Reason for Recommended Restrictions		
7. Patent and Copyright Information Does this information product disclose any new equipment, process or material? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If so, identify page nos. 27 Has an invention disclosure been submitted to DOE covering any aspect of this information product? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If so, identify the DOE (or other) disclosure number and to whom the disclosure was submitted Are there any patent-related objections to the release of this information product? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If so, state these objections. Does this information product contain copyrighted material? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If so, identify the page numbers _____ and attach the license or other authority for the government to reproduce		
8. Submitted by Name and Position (Please print or type) ADAMS, CHARLES W., DR. Organization PIERCE STATE UNIVERSITY, DEPARTMENT OF PHYSICS Signature <i>Charles W. Adams</i> Date 7-15-81		
<b>FOR DOE OR OTHER AUTHORIZED USE ONLY</b>		
9. Patent Clearance ("X" one) <input type="checkbox"/> a. DOE patent clearance has been granted by responsible DOE patent group. <input type="checkbox"/> b. Report has been sent to responsible DOE patent group for clearance.		

Figure 1-6  
Example Recommendations for Announcement and  
Distribution of Documents

SUGGESTED FEDERAL ASSISTANCE SOLICITATION  
DESCRIPTION OF THE UNIFORM REPORTING SYSTEM  
FOR FEDERAL ASSISTANCE

1. INTRODUCTION.

- a. Purpose. The uniform reporting system for Federal assistance is a set of standard forms and procedures for communicating plans and reporting the conduct and results of DOE assisted activities. Recipients of DOE grants and parties to DOE cooperative agreements are required to provide DOE with the necessary minimum level of information, through the use of selected forms, to enable DOE to carry out its fiscal accountability and program responsibilities.
- b. Reporting Objectives. Both planning and performance information is provided to the DOE program manager through submission of the selected plans and reports. Planning data depicted in the baseline planning forms provide a summary level cost and schedule baseline against which performance data can be compared to ensure the responsible administration of Federal assistance programs. Performance data collected provide measures of program status and results achieved.
- c. Reporting Requirements. The scope and level of detail of baseline information and the frequency and nature of performance reporting have been determined by the program manager. Proposed reporting requirements are identified in the solicitation. Copies of the baseline plan forms required for this program also are included as part of the application package. The final selection of required reports will be specified in the "Federal Assistance Reporting Checklist" incorporated in the award instrument. The determination of the reports required was made in consideration of the type of activity being assisted, the duration and complexity of the anticipated effort, probable amount of award funding, and relevant Office of Management and Budget guidelines.
  - (1) Baseline, status, and technical reports proposed as requirements for this program are described on the following pages.
  - (2) A complete description of reports is available in the "DOE Uniform Reporting System for Federal Assistance (Grants and Cooperative Agreements) Guidelines," (DOE/MA-001) available from the DOE Technical Information Center, Secondary Distribution, P.O. Box 62, Oak Ridge, TN 37830.

2. BASELINE PLANS.

- a. Federal Assistance Management Summary Report (Form EIA-459E). This report is a single page form on which the applicant enters projected cost and activity data. The cost data to be entered must depict projected total

costs for the life of the project on at least a quarterly basis. The activity data required is a delineation of the project's major milestones and bar charts displaying the projected schedule for attainment of these milestones. This form is used for both the baseline plan when required and for project status reporting.

- b. Federal Assistance Milestone Plan (Form EIA 459B). The milestone plan is used to portray the major milestones of the proposed project in bar chart format. It covers the life of the project and is to be organized by major project activities, such as those performed at work breakdown structure level 2. It is accompanied by the Milestone Log which lists the events and milestones depicted on the Federal Assistance Milestone Plan.
- c. Federal Assistance Budget Information Form (Form EIA 459C). The "Federal Assistance Budget Information Form" is to be used by the applicant to provide summary level data on the proposed project total budget. The total project budget is broken down into Federal and non-Federal funds for each major activity. A second breakdown of the total budget for each major activity by object class of expenditure (i.e., personnel or travel) also is requested.
- d. Federal Assistance Budget Information Form (Construction) (Form 459D). The "Budget Information Form" for construction is to be used by the applicant to provide summary level data on the proposed project total budget. The total product is broken down by cost classification. Space is provided for listing those parts of the project not subject to Federal participation and for showing the proposed method of financing the non-Federal share.

### 3. STATUS REPORTS.

- a. Federal Assistance Management Summary Report (Form EIA 459E). This report is a single page form on which the applicant provides summary cumulative cost and activity data for each reporting period. More detailed instructions are on the back of the form.
- b. Federal Assistance Program/Project Status Report (Form EIA 459F). This report is a single page form on which the award recipient enters brief narrative discussion of the following topics: approach changes; performance variances, accomplishments, or problems; open items; and status assessment and forecast. Each of these topics is addressed, as appropriate, for a given reporting period and the report is submitted periodically, as required, during the life of the project.
- c. Financial Status Report (Standard Form 269). This form is used to provide DOE with regular periodic accounting of project funds expended. The accounting may be on either a cash or accrual basis. Actual total expenditures and obligations incurred, but not paid, are reported for each reporting period for each major activity. They should correlate with those identified on the "Federal Assistance Milestone Plan" when the "Federal Assistance Milestone Plan" is used. Provision is made to identify the Federal and non-Federal share of project outlays for each identified activity.

#### 4. TYPES OF TECHNICAL REPORTS.

- a. Technical Progress Report. This report summarizes the work performed during a specific reporting period. It will include the technical and scientific results achieved. This report is required at least once during the fiscal year on RD&D projects. More frequent submissions, when required, will be identified on the "Reporting Requirements Checklist."
- b. Topical Report. This report provides a comprehensive statement of the technical results of the work performed for a specific task or phase of the contract, or reports detailing significant new scientific or technological advances.
- c. Final Technical Report. This report is required on all RD&D contracts/agreements upon completion of the contract/agreement. It provides a technical accounting of the total work performed on the contract. It is a comprehensive description of the results achieved and will include, to support the investigations undertaken, tabulations of data, figures, photographs, and other bibliographic citations. It summarizes all topical reports and technical progress reports where applicable. The report will include the original hypotheses of the project and present the investigative approaches used, complete with problems encountered or departures from the planned methodology, and an assessment of their impact on the project results. The report format should contain an executive summary of the contents followed by a project summary. The main body should include, where applicable, facts, figures, analyses, and assumptions used during the life of the project to support the conclusions and recommendations. Appendices containing detailed computations and other reference materials may be included.
- d. Journal Articles. Publication in open literature is desirable. When DOE requires a prepublication review and patent clearance, copies of the proposed article must be provided to DOE as identified in the "Reporting Requirements Checklist" special instructions section.
- e. Conference Papers. Participation at conferences related to the contractor's mission is encouraged; however, papers to be presented must be submitted to DOE for review and patent clearance prior to presentation. Requirements for submission of papers will be specified in the special instructions section of the "Reporting Requirements Checklist."
- f. Other Technical Reports/Publications. Requirements for other types of technical reports/publications, such as books, theses, translations, and computer software with scientific applications, will be specified in the solicitation or contract. Copies of these will be provided to DOE for prepublication review and necessary clearances in accordance with the special instruction section of the "Reporting Requirements Checklist."

- g. Notice of RD&D Project (Form DOE 538). This report is required for all DOE operated sites that conduct research and development activities and all contractors performing research who are subject to the uniform reporting system.

### CHAPTER III

#### TECHNICAL INFORMATION REPORTING

##### 1. GENERAL.

- a. Scientific and technical information called for or developed under this Order is used by program managers in their technical performance evaluations. Scientific and technical information developed during work supported by DOE shall be reported promptly and fully to the Department's Technical Information Center (TIC) located in Oak Ridge, Tennessee, for inclusion in DOE's information data base; and, as security, patent, and other DOE policy considerations permit, to be made available to the scientific, technical, and industrial communities, and to the public through approved channels. The Technical Information Center is the Department's centralized facility for the management of scientific and technical information developed by DOE and is responsible for developing, designing, implementing, and evaluating Departmentwide systems and programs to effectively manage and disseminate the technical results of the Department's research and development programs.
- b. When a grant is expected to result in the production of scientific and technical information, grantees shall be required to submit at least a "Notice of Energy RD&D Project" (DOE Form 538) and a final technical report.
- c. The publications listed below provide detailed information concerning the reporting and dissemination of scientific and technical information. Implementation procedures for managing the Department's scientific and technical information formerly contained in this Order will be expanded and issued separately by the Technical Information Center in the near future.
  - (1) DOE 1340.1A, MANAGEMENT OF PUBLIC COMMUNICATION PUBLICATIONS, AND SCIENTIFIC, TECHNICAL, AND ENGINEERING PUBLICATIONS.
  - (2) DOE 1430.1, MANAGING THE DEPARTMENT OF ENERGY'S SCIENTIFIC AND TECHNICAL INFORMATION.
  - (3) DOE/TIC-4500, STANDARD DISTRIBUTION FOR UNCLASSIFIED SCIENTIFIC AND TECHNICAL REPORTS.
  - (4) M-3679, STANDARD DISTRIBUTION FOR CLASSIFIED SCIENTIFIC AND TECHNICAL REPORTS.
  - (5) DOE/TIC-4600, DOE TECHNICAL INFORMATION CENTER, ITS FUNCTION AND SERVICES.

## 2. SELECTION OF TECHNICAL REPORTS.

- a. The solicitation will describe the general technical reporting requirements that are expected for grants or cooperative agreements. The DOE program manager will determine which reports will be required, their frequency of submission, and their distribution within DOE based on the scope of the grant or cooperative agreement. Descriptions of the reports are included in Attachment 1. Figure III-1 presents suggested DOE distribution and submission frequency for technical reports. These requirements are recorded on the "Federal Assistance Reporting Checklist," and the appropriate addressees for distribution are noted on the distribution list.
- b. When determining the reporting requirements, the program manager should consider:
  - (1) Federal Government policy to the extent that the type and frequency of reports should be the minimum necessary to permit DOE to meet its responsibilities effectively.
  - (2) Other pertinent policies and directives of DOE such as the publications listed in paragraph 1c.
  - (3) Applicable policies, directives, and criteria established by the responsible DOE organization, such as the program division.
  - (4) Personal knowledge of the nature and scope of the technical work to be performed, and an assessment of the rate at which technical information will be developed, become available, and be disseminated.
  - (5) The Department's requirements that a technical progress report and a "Notice of Energy RD&D Project" must be submitted at least once each year, and that a final technical report be submitted at the completion/termination of all research, development, and demonstration grants/cooperative agreements. For projects one year or less in duration only a final technical report is submitted.
- c. At least two full-size copies of the scientific and technical reports are required for TIC. Both copies must be suitable for reproduction and microfiling. The program manager shall ensure that if organizations print scientific or technical reports for their own use, a sufficient number of copies are also printed for standard distribution.
- d. Distribution other than the standard distribution shall be coordinated with TIC. Standard distribution and other distribution coordinated with TIC is referred to as official distribution.

Frequency Guide for Technical Reports

	Frequency*
TECHNICAL PROGRESS REPORT	Y
TOPICAL REPORT	A
FINAL TECHNICAL REPORT	F
JOURNAL ARTICLES	A
NOTICE OF ENERGY RD&D PROJECT	O, Y

\* An annual Technical Progress Report and Notice of Energy RD&D is the suggested minimal requirement.

Legend

O Contract Award  
Y Yearly or upon contract award  
A As required  
F Final report

Guide for Technical Reports

Report Type Distribution	TECHNICAL PROGRESS REPORT	TOPICAL REPORT	FINAL TECHNICAL REPORT	JOURNAL ARTICLE MANUSCRIPT	JOURNAL ARTICLE REPRINT	CONFERENCE PAPER OR PROCEEDINGS	TRANSLATIONS	THESES	BOOKS	NOTICE OF ENERGY RD&D PROJECT	No. of Copies
Project Manager	4	4	4	4	4	4	4	4	4	3	
Contract Administrator	1	1	1	1	1	1	1	1	1	1	
Patent Counsel	1	1	1	1	1	1	1	1	1	1	
TIC	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	

\*/ Printed copies as called for in DOE 1430.1 and other TIC guidance.

Figure III-1  
Frequency and Distribution of Technical Reports

Appendix M

**MODEL COOPERATIVE AGREEMENT**

## MODEL COOPERATIVE AGREEMENT

This model cooperative agreement is a generic document applicable to all participants. The agreement incorporates by reference the DOE Financial Assistance Rules, 10 CFR Part 600 Subparts A and C. Offerors' attention is called to recent changes to 10 CFR Part 600, including comprehensive changes to Subpart C. These changes were recently published as a final rule in the Federal Register.

This Agreement will be modified, depending on the type of participant, to incorporate by reference the appropriate OMB circular and regulatory coverage as follows:

(1) For profit making organizations

- o OMB Circular A-110, Uniform Administrative Requirements  
(OMB Circular A-110 coverage was generally extended to profit making organizations by 10 CFR Part 600.
- o Patent Coverage; 10 CFR Part 600, DOE Financial Assistance Rules and 48 CFR Part 927 of the Department of Energy Acquisition Regulations
- o Cost Principles; 48 CFR 31.2 Federal Acquisition Regulations modified by 48 CFR 931.2 DOE Acquisition Regulations

(2) For non-profit organizations

- o OMB Circular A-110, Uniform Administrative Requirements
- o Patents, 37 CFR 401
- o OMB Circular A-122, Cost Principles

(3) For State/Local Governments

- o OMB Circular A-102, Uniform Administrative Requirements
- o OMB Circular A-87, Cost Principles

(4) For Institutions of Higher Education

- o OMB Circular A-110, Uniform Administrative Requirements
- o Patents, 37 CFR 401
- o OMB Circular A-21, Cost Principles

In addition, certain clauses contained herein cannot be completed until the nature and scope of the project selected are known. Any proposed exceptions or deviations taken with respect to the model cooperative agreement, or the attachments thereto, must be detailed in the Business and Management Volume of the proposal as explained in SECTION 4.3.6, "Summary of Exceptions, Deviations and Assumptions."

U.S. DEPARTMENT OF ENERGY  
NOTICE OF FINANCIAL ASSISTANCE AWARD  
(See Instructions on Reverse)

Under the authority of Public Law 95-91; Pub. L. 93-577; & Pub. L. 100-202 and  
subject to legislation, regulations and policies applicable to (cite legislative program title):

1. PROJECT TITLE		2. INSTRUMENT TYPE <input type="checkbox"/> GRANT <input type="checkbox"/> COOPERATIVE AGREEMENT										
3. RECIPIENT (Name, address, zip code, area code and telephone no.)		4. INSTRUMENT NO.		5. AMENDMENT NO.								
		6. BUDGET PERIOD FROM:                      THRU:		7. PROJECT PERIOD FROM:                      THRU:								
8. RECIPIENT PROJECT DIRECTOR (Name and telephone No.)		10. TYPE OF AWARD  <input type="checkbox"/> NEW <input type="checkbox"/> CONTINUATION <input type="checkbox"/> RENEWAL  <input type="checkbox"/> REVISION <input type="checkbox"/> SUPPLEMENT										
		12. ADMINISTERED FOR DOE BY (Name, address, zip code, telephone No.)										
9. RECIPIENT BUSINESS OFFICER (Name and telephone No.)												
11. DOE PROJECT OFFICER (Name, address, zip code, telephone No.)												
13. RECIPIENT TYPE <div style="display: flex; justify-content: space-between;"><div><input type="checkbox"/> STATE GOVT      <input type="checkbox"/> INDIAN TRIBAL GOVT      <input type="checkbox"/> HOSPITAL</div><div><input type="checkbox"/> FOR PROFIT ORGANIZATION      <input type="checkbox"/> INDIVIDUAL</div></div> <div style="display: flex; justify-content: space-between;"><div><input type="checkbox"/> LOCAL GOVT      <input type="checkbox"/> INSTITUTION OF HIGHER EDUCATION      <input type="checkbox"/> OTHER NONPROFIT ORGANIZATION</div><div><input type="checkbox"/> C   <input type="checkbox"/> P   <input type="checkbox"/> SP      <input type="checkbox"/> OTHER (Specify) _____</div></div>												
14. ACCOUNTING AND APPROPRIATIONS DATA					15. EMPLOYER I.D. NUMBER/SSN							
<table border="1" style="width:100%; border-collapse: collapse;"><tr><td style="width:25%;">a. Appropriation Symbol</td><td style="width:25%;">b. B &amp; R Number</td><td style="width:25%;">c. FT/APP/OC</td><td style="width:25%;">d. CFA Number</td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr></table>						a. Appropriation Symbol	b. B & R Number	c. FT/APP/OC	d. CFA Number			
a. Appropriation Symbol	b. B & R Number	c. FT/APP/OC	d. CFA Number									
16. BUDGET AND FUNDING INFORMATION												
a. CURRENT BUDGET PERIOD INFORMATION			b. CUMULATIVE DOE OBLIGATIONS									
(1) DOE Funds Obligated This Action      \$ _____			(1) This Budget Period      \$ _____ [Total of lines a. (1) and a. (3)]									
(2) DOE Funds Authorized for Carry Over      \$ _____			(2) Prior Budget Periods      \$ _____									
(3) DOE Funds Previously Obligated in this Budget Period      \$ _____			(3) Project Period to Date      \$ _____ [Total of lines b. (1) and b. (2)]									
(4) DOE Share of Total Approved Budget      \$ _____												
(5) Recipient Share of Total Approved Budget      \$ _____												
(6) Total Approved Budget      \$ _____												
17. TOTAL ESTIMATED COST OF PROJECT      \$ _____ <i>(This is the current estimated cost of the project. It is not a promise to award nor an authorization to expend funds in this amount.)</i>												
18. AWARD/AGREEMENT TERMS AND CONDITIONS												
This award/agreement consists of this form plus the following:												
a. Special terms and conditions (if grant) or schedule, general provisions, special provisions (if cooperative agreement)												
b. Applicable program regulations (specify) _____ (Date) _____												
c. DOE Assistance Regulations, 10 CFR Part 800, as amended, Subparts A and <input type="checkbox"/> B (Grants)      or <input type="checkbox"/> C (Cooperative Agreements).												
d. Application/proposal dated _____ <input type="checkbox"/> as submitted <input type="checkbox"/> with changes as negotiated												
19. REMARKS												
20. EVIDENCE OF RECIPIENT ACCEPTANCE			21. AWARDED BY									
_____ (Signature of Authorized Recipient Official)			_____ (Signature)									
_____ (Name)			_____ (Name)									
_____ (Title)			_____ (Title)									

# INSTRUCTIONS

*(This form shall be completed in accordance with the following instructions. For any clarification or additional information that might be needed, consult the appropriate section of the DOE Financial Assistance Procedures Manual (DOE-FAPM).)*

Insert in the space provided, in the line which begins, "Under the Authority of Public Law . . .," the number and the name of the Public Law which authorizes this award. On the line below, enter the title of the pertinent program.

**Block 1** - Enter the project title as it appears in the SF-424 or equivalent application/proposal face sheet.

**Block 2** - Place a checkmark in the box beside the appropriate financial assistance instrument.

**Block 3** - Enter the name, address and telephone number of the applicant/proposer as it appears in the SF-424 or equivalent application/proposal face sheet.

**Block 4** - Enter the instrument number. (See DOE-FAPM.)

**Block 5** - Enter the appropriate amendment number. (See DOE-FAPM for guidance.)

**Block 6** - Enter the starting date and expiration date for the current budget period. If a budget period is being changed, enter the starting date and expiration date for the budget period, as changed.

**Block 7** - Enter the starting date and anticipated completion date for the project. If a project period is being changed, enter the starting date and anticipated completion date for the project period, as changed.

**Block 8** - Enter the name and telephone number of the individual designated by the applicant/proposer as the director of the project.

**Block 9** - Enter the name and telephone number of the individual designated by the applicant/proposer as the contact for all business matters.

**Block 10** - Place a checkmark in the box opposite the term which identifies the type of action being taken. (The terms are defined in the DOE-FAPM.)

**Block 11** - Enter the name, address and telephone number of the individual designated by the DOE program office as the project officer.

**Block 12** - Enter the name, address and telephone number of the individual/organization who will administer the agreement for DOE.

**Block 13** - Place a checkmark in the box beside the applicable recipient type. If the recipient is a for-profit organization also check one of the lower boxes as follows: "C" for Corporation, "P" for Partnership and "SP" for Sole Proprietorship. If the recipient is of a type not indicated place a checkmark in the box beside "Other," and identify the recipient type in the space provided.

**Block 14** - Enter where indicated, the appropriation symbol, B&R number, Fund Type (FT)/AFP Code (AFP)/Objective Class (OC) and CFA Number from the Procurement/Financial Assistance Request Authorization (DOE Form PR-799A). Completion of Block 14.d. is required only for awards made by Headquarters.

**Block 15** - Enter the applicant's/proposer's Federal Employer Identification No. from the SF-424 or equivalent application/proposal face sheet, or if the applicant/proposer is an individual, enter his/her social security number.

**Block 16** - Entries should be made as follows. (If no dollar entry is appropriate a zero should be entered to indicate there was no error of omission.)

Line a.(1) - Enter the amount of DOE funds obligated by this action.

Line a.(2) - Enter the amount of DOE funds not expended in prior budget period(s), if any, authorized by DOE for expenditure in the current budget period.

Line a.(3) - Enter the amount of DOE funds previously obligated in the current budget period.

Line a.(4) - Enter DOE's share of the total approved budget shown on Line a.(6).

Line a.(5) - Enter the recipient's share of the total approved budget shown on Line a.(6).

Line a.(6) - Enter the total approved budget for the current budget period. (Add the amounts in lines a.(4) and a.(5).)

Line b.(1) - Enter the amount of DOE funds obligated in the current budget period. (Add the amounts in lines a.(1) and a.(3).)

Line b.(2) - Enter the amount obligated by DOE in prior budget periods.

Line b.(3) - Enter the amount obligated by DOE in the project period to date. (Add the amounts in lines b.(1) and b.(2).)

**Block 17** - Must be completed for cooperative agreements. Contracting Officers may exercise discretion as to whether to complete it for grants. Enter in the blank provided, the amount which represents the current estimate of total funds and dollar value of in-kind contributions (both DOE and recipient shares) needed to carry out the entire project. Include all funds and contributions previously provided, those being provided by this action, and all anticipated future obligations and contributions of both parties.

**Block 18** - Complete as follows:

Item a. - No entry necessary.

Item b. - Enter the legal citation from the Code of Federal Regulations or Federal Register and the effective date for the program regulations applicable to the program under which the award is made.

Item c. - Mark the box beside B for grants or C for cooperative agreements.

Item d. - In the blank provided, enter the date of the application/proposal. (If SF-424 is used, see block 23c on page 1.) Place a checkmark in the appropriate box to indicate whether the application/proposal was accepted as submitted or with negotiated changes.

**Block 19** - Enter any explanation or advisory comments which are required for, or applicable to, this action.

**Block 20** - Will be completed by the recipient.

**Block 21** - The Contracting Officer shall sign and date the top line. His/her name and title should be entered on the next two lines. This box must be signed prior to forwarding to recipient.

## CONTENTS OF THE MODEL COOPERATIVE AGREEMENT

<u>SECTION</u>	<u>Page</u>
I. STATEMENT OF JOINT OBJECTIVES	7
II. DEFINITIONS	7
III. PROJECT MANAGEMENT	7
IV. FINANCIAL SUPPORT	10
V. PAYMENT ARTICLE	15
VI. PROJECT INFORMATION SYSTEM	15
VII. PROPERTY MANAGEMENT AND DISPOSITION	15
VIII. TERMINATION AND WITHDRAWAL	15
IX. KEY PERSONNEL	16
X. PUBLIC INFORMATION RELEASE	16
XI. DESIGNATION OF THE DOE CONTRACTING OFFICER'S REPRESENTATIVES	16
XII. INSURANCE AND INDEMNITY	16
XIII. BONDING FOR CONSTRUCTION	17
XIV. TECHNICAL AND ECONOMIC EVALUATION	17
XV. LEGAL NOTICE/DISCLAIMER	18
XVI. ORDER OF PRECEDENCE	18
XVII. GENERAL PROVISIONS	18

## ARTICLE I -- STATEMENT OF JOINT OBJECTIVES

The primary objective of this Cooperative Agreement is to conduct a cost shared innovative clean coal technology project to demonstrate technologies that are capable of being commercialized in the 1990's and of achieving significant reduction of SO<sub>2</sub> and/or NO<sub>x</sub> emissions from existing coal burning facilities that contribute to transboundary pollution.

(INSERT CONTENTS SPECIFIC TO PROJECT CONSISTENT WITH DOE FINANCIAL ASSISTANCE RULES 10 CFR PART 600)

## ARTICLE II -- DEFINITIONS

For the purposes of this Cooperative Agreement, the following terms are highlighted.

- (A) "Cooperative Agreement" shall mean this agreement between the United States Department of Energy (DOE) and the Participant, Instrument Number \_\_\_\_\_.
- (B) "Contracting Officer" shall mean the authorized representative of the DOE for all matters relating to this Cooperative Agreement.
- (C) "Contracting Officer's Technical Representative (COTR)" shall mean the DOE authorized representative for all technical matters pertaining to the Cooperative Agreement.
- (D) "NEPA" shall mean the National Environmental Policy Act.
- (E) "Participant" shall mean \_\_\_\_\_.

(OTHER DEFINITIONS AS ARE APPROPRIATE)

## ARTICLE III -- PROJECT MANAGEMENT

Project Management includes the following:

- (A) Participant Role.
- (B) DOE Role.
- (C) Project Performance.
- (D) Resources and Access.
- (E) Participant's Management Structure/Management Requirements

(A) Participant Role

The Participant shall be responsible for all aspects of project performance under this Cooperative Agreement. This shall include:

- 1) Design and Permitting.
- 2) Construction and Start-up.
- 3) Operation and Disposition.

The Participant shall designate a Project Manager who shall serve as its authorized representative for the technical and administrative performance of all work to be performed under this Cooperative Agreement.

This Project Manager shall become the single authorized point of contact for all matters between the Participant and the DOE.

(B) DOE Role

The DOE shall be responsible for monitoring all aspects of the project and for granting or denying all approvals required by this Cooperative Agreement.

The DOE Contracting Officer will appoint a COTR who has the authority to issue "Technical Advice" and:

- (1) Suggest redirection of the Cooperative Agreement effort, recommend a shifting of work emphasis between work areas or tasks, and suggest pursuit of certain lines of inquiry which assist in accomplishing the Statement of Work.
- (2) Approve those reports, plans and technical information required to be delivered by the Participant to the DOE under this Cooperative Agreement.

The DOE COTR does not have the authority to issue any Technical Advice which:

- (1) Constitutes an assignment of additional work outside the Statement of Work.
- (2) In any manner causes an increase or decrease in the total estimated cost, or the time required for Cooperative Agreement performance.
- (3) Changes any of the terms, conditions, or specifications of the Cooperative Agreement.
- (4) Interferes with the Participant's right to perform the terms and conditions of the Cooperative Agreement.

All Technical Advice shall be issued in writing by the DOE COTR.

(C) Project Performance

- (1) All work to be performed under this Cooperative Agreement will be divided into the following phases, in accordance with the Statement of Work, Attachment A. Those phases, and their expected durations are:

Phase 1     Design and Permitting (\_\_\_ months).

Phase 2     Construction and Start-up (\_\_\_ months).

Phase 3     Operation and Disposition (\_\_\_ months).

The total estimated period of performance for this project shall be \_\_\_ months.

- (2) Determination to proceed with subsequent phases:

At least four budget periods will be established, the duration of which will coincide with major project decision points but need not correspond to Phases. The first decision point will be at the end of the Preliminary Design (i.e., during phase 1). Consistent with Public Law 100-202, DOE will obligate sufficient funds to cover its share of the cost for each budget period. To continue work beyond the current budget period, the Participant shall submit a project evaluation report and a continuation application to the DOE Contracting Officer at least 60 days prior to the end of the current budget period. The continuation application shall contain, as a minimum, the following:

- o A detailed report of technical progress.
- o A detailed description of the Participant's plans for the conduct of the subsequent phase.
- o The detailed budget for the subsequent phase.

DOE will accept or reject the continuation application no later than 30 days prior to the end of the current budget period. DOE will accept the continuation application provided the criteria in the approved Project Evaluation Plan (see Article XIV) are met and appropriated funds are available for the project. In determining whether the criteria have been met, DOE will consider the Participant's Project Evaluation Report and other related information. In the event the DOE does not accept the continuation application, DOE shall bear no costs of the project in excess of the maximum DOE obligation through the current budget period.

(D) Resources and Access

All services, personnel, facilities, equipment, materials, and supplies shall be furnished by the Participant, unless otherwise specified under this Cooperative Agreement.

The principal place of performance shall be \_\_\_\_\_.  
At the request of the DOE Contracting Officer or the COTR, the Participant shall provide Government officials and interested members of the public with access to the site(s) of the project to view its operation at reasonable times and in reasonable numbers of persons.

(E) Participant's Management Structure/Management Requirements

(INSERT CONTENTS SPECIFIC TO PROJECT)

The Participant shall manage the project in accordance with the Project Management Plan, a deliverable required by the Statement of Work.

ARTICLE IV -- FINANCIAL SUPPORT

(A) DOE Obligation

The maximum DOE obligation to the Participant is the amount identified in Block 16.b(3) of the Notice of Financial Assistance Award. DOE shall not be obligated to make any additional, supplemental, continuation, renewal, or other award for the same or any other purpose.

(B) Cost Sharing and Project Cost Requirements

(1) DOE shall share in allowable project costs in the percentages indicated in Paragraph (G) of this Article.

(2) Project Costs Not Allowed for Cost-Sharing Purposes

- (a) DOE shall not accept valuation for property sold, transferred, exchanged, or otherwise manipulated to acquire a new basis for depreciation purposes or to establish a rental value in circumstances which would amount to a transaction for the purpose of this Cooperative Agreement.
- (b) Revenues or royalties from prospective operation of the project beyond the time considered in this award of financial assistance or proceeds from the sale of the assets of the project, or revenues or royalties from replication of the technology in future projects or plants, are not to be considered cost-sharing.
- (c) Revenues or royalties anticipated from the operation of the project during the time period provided in the Cooperative Agreement may not be included in the Financial Plan as adopted and being utilized by the Participant. If, however, such revenues or royalties are, in fact, realized during the time period provided in the Cooperative Agreement, the Participant may use them for any purpose.

- (d) Property which has been fully depreciated will not receive any cost-sharing value except to the extent that it has been in continuous use by the proposer during the entire previous calendar year 1986. (See Section (3) below.)
- (e) Existing facilities, equipment, and supplies, or previously expended research or development funds are not cost sharing for the purposes of this Cooperative Agreement, except as amortized, depreciated, or expensed in normal business practice (see Section (3) below). Contributions in the form of foregone revenues or replacement power costs will not be considered as cost sharing.
- (f) Patents, proprietary data, or prior work will not be valued in determining the Participant's cost participation in the project.
- (g) Allowable costs which are absorbed by the Participant as its share of cost participation may not be charged directly or indirectly or may not have been charged directly or indirectly in the past to the Federal Government under other contracts, agreements, or grants. Additionally, other appropriated Federal funds are not cost sharing for the purposes of this Cooperative Agreement.
- (h) Fee or profit will not be paid to the Participant under this Cooperative Agreement. Foregone fee or profit by the Participant will not be considered for cost sharing purposes.

(3) Allowable Project Costs for Cost-Sharing Purposes

- (a) Cost participation by the Participant may be accomplished by a contribution of either direct or indirect costs provided such costs are otherwise allowable in accordance with the cost principles applicable to the award.
- (b) For property contributed to the project and which has been fully depreciated but was in continuous use during the entire previous calendar year, a fair use value for the life of the project will be assigned by DOE. The fair use value will be the annual average depreciation used by the Participant as permitted under statute or Internal Revenue Service regulations under which it was depreciated.
- (c) The value that will be allowed for contributions of currently depreciating property and which are of relevance to the project proposed is the depreciation schedule which has been used and is allowed under statute or Internal Revenue Service regulations for the property. This depreciation will be limited in its cost-share value to the depreciation claimed during the life of the demonstration project.
- (d) Contributed land will be valued at its fair rental value for the period of the demonstration.
- (e) Contributed land, equipment, and facilities will be counted as cost sharing only for the periods during which they are actually brought into use for this project. For example, that

portion of a facility used for housing the design team may be credited as a cost share during Phase I, but contributed equipment to be incorporated in the construction may be credited as a cost share only during those portions of Phases II and III when actually utilized. Property that is owned by the Participant and is made available to the project for the project period or any part thereof will be valued in accordance with the principles described above.

- (f) Value for contributed equipment and facilities will be assigned only to the extent that the facilities or equipment are project related.
- (g) The cost of disposal of the facility and equipment is an allowable cost if accomplished during Phase 3 of the Cooperative Agreement.

(C) Prior Approvals

(1) National Environmental Policy Act

NEPA requires DOE to consider the impact of the project on the environment. Due to the NEPA requirements the Participant will be required to supply to DOE certain environmental information and design information before detailed design work can start. DOE funds may not be expended by the Participant on detailed design, construction, or operation unless and until DOE notifies the Participant that all NEPA requirements have been satisfied. The Participant, however, may expend its funds at its own risk.

(2) Budget Period Overlap Activities

- (a) Overlap activities included in current budget.

Notwithstanding that funds may have been obligated in the current budget period for phase overlap activities, the Participant shall not incur costs for any of these activities until prior approval has been given by the DOE Contracting Officer.

- (b) Overlap activities not included in current budget.

The Participant may request DOE approval for revision of a budget for the current budget period to allow for other phase overlap activities not already included in the budget for that period. This request shall include a revised budget for the current period which specifically identifies such activities and shall provide a written explanation of the benefits to accrue by their early initiation.

(D) Recoupment/Repayment

(1) Recovery of Government Investments

Repayment of the Government's contribution shall consist of: (1) Revenue from the sale of equipment that is manufactured as a result of commercialization of the demonstration technology, set at two percent of gross sales, and (2) Revenue from the licensing of the

technology to third party end-users of the technology, set at 3 percent of royalties arising from such licensing.

Recoupment will continue until the Government's share, adjusted for inflation (based on the Wholesale Price Index) has been recovered or until 20 years have elapsed from the date specified in the agreement for the end of Phase 3, whichever occurs first.

If revenues are received from operation of the project, either during or beyond the time considered in the award of financial assistance, the Participant may use them for any purpose.

(2) Reporting of Recoupment Payments

The Participant shall annually submit reports and make payments to the DOE Contracting Officer beginning with the first year after the date scheduled (see Section II C) for the end of Phase 3 and annually thereafter, for the duration of the term specified in Paragraph (D) 1, above. Such annual reports and payments shall be made not later than thirty (30) days following the close of the Participant's accounting year. The Participant shall maintain and retain all records of revenues specified in Paragraph (D) 1, above and make such records available to the Government for examination and audit.

(E) Additional Funds

If at any time during the performance of this Cooperative Agreement the Participant has reason to believe that the total estimated project costs for any budget period are insufficient to cover the completion of all work to be performed during such period, the Participant shall provide the DOE Contracting Officer immediate written notice. Such written notice shall, as a minimum, set forth (1) a detailed explanation of the facts and rationale supporting such determination, (2) a proposed budget detailing the amount of additional funds needed to enable the completion of such period, and (3) the specific amount requested from DOE if DOE is being asked to cost-share in the additional funds.

DOE is under no obligation to provide additional funds. Under no circumstance shall the Participant incur any additional costs to be cost-shared by DOE under this Cooperative Agreement without the prior written approval of the DOE Contracting Officer.

(F) DOE/Participant Share of Additional Funds

If the use of additional DOE funds are approved by DOE for any budget period and unless such approval provides for a lesser cost-share by the Government, the parties to this Cooperative Agreement shall share in any additional authorized costs in excess of those estimated as of the date of award in amounts proportional to the costs borne by the parties under this Cooperative Agreement.

DOE shall under no circumstances provide additional funds in excess of twenty-five (25) percent of its share of the total estimated project cost as shown on the initial award document in block 17 of the "Notice of Financial Assistance Award."

(G) Total Estimated Project Cost

The DOE and the Participant shall share in the total estimated project costs of performance of this Cooperative Agreement under each Phase in accordance with their respective percentage shares as defined below.

(1) Phase I

DOE Share	\$ _____	_____ %
Participant Share	\$ _____	_____ %
Total	\$ _____	100%

(2) Phase II

DOE Share	\$ _____	_____ %
Participant Share	\$ _____	_____ %
Total	\$ _____	100%

(3) Phase III

DOE Share	\$ _____	_____ %
Participant Share	\$ _____	_____ %
Total	\$ _____	100%

(4) Total Estimated Project Cost

Total DOE share of:

Estimated Project Cost	\$ _____	_____ %
------------------------	----------	---------

Total Participant Share of:

Estimated Project Cost	\$ _____	_____ %
------------------------	----------	---------

TOTAL ESTIMATED PROJECT COST	\$ _____
------------------------------	----------

This is the current estimated cost for the entire project. It is not a promise to authorize or an authorization to expend funds in this amount. Funding for and authorization to proceed with each budget period will be as provided in Articles III (C) and IV (C)(2).

(H) Administration of Project Costs

The Participant shall estimate, allocate, accumulate, record, and report project costs separately for each individual budget period for work authorized under this Cooperative Agreement.

## ARTICLE V -- PAYMENT ARTICLE

[appropriate funding mechanism will be determined on a project specific basis consistent with 10 CFR 600.112]

## ARTICLE VI -- PROJECT INFORMATION SYSTEM

Reports shall be submitted in accordance with DOE Form 459A, Federal Assistance Reporting Checklist (Attachment C [as appropriate for the specific project]).

## ARTICLE VII -- PROPERTY MANAGEMENT AND DISPOSITION

Title to any and all real and/or personal property (excluding Government-furnished property) constructed, fabricated, installed, furnished, or procured by or on behalf of the Participant in connection with the performance of the work under this Cooperative Agreement shall be vested in the Participant and shall remain its property. The property, however, may not be disposed of during the term of this Cooperative Agreement without the prior written consent of the Contracting Officer and the Participant assures that such property will be made available for the purposes of demonstration under this Cooperative Agreement. [In the event that Government property is furnished, it will be managed and disposed of in accordance with 10 CFR 600.117]

## ARTICLE VIII -- TERMINATION AND WITHDRAWAL

### (A) Termination by Mutual Agreement

This Cooperative Agreement may be terminated in whole, or in part, by the mutual agreement of the parties. Mutual termination may occur at any time, but must be in writing and approved by the DOE Contracting Officer and an authorized representative of the Participant.

### (B) Termination for Default

The DOE may terminate this Cooperative Agreement for default in whole, or in part, if the Participant fails to comply with any of its terms and conditions. A default determination shall be subject to the Disputes and Appeals provisions of 10 CFR 600.26. The DOE Contracting Officer shall terminate by delivering to the Participant a written Notice of Termination. This Cooperative Agreement, however, may not be terminated for delays in performance caused by fires, floods, strikes, acts of God, acts or omissions of the Government, or similar causes which are beyond the control of the Participant.

### (C) Withdrawal

The Participant may unilaterally withdraw from this project at the completion of any budget period. Such withdrawal shall occur as a result of a decision by the Participant not to submit a continuation application. A decision by DOE not to approve the Participant's continuation application shall be made only in accordance with the terms of Articles III(C)(2) and XIV of this Cooperative Agreement. Participant's withdrawal or DOE's decision not to approve the Participant's continuation application shall be at no additional cost to either party beyond their respective individual project cost shares at the completion of that project budget period.

## ARTICLE IX -- KEY PERSONNEL

The personnel specified in this clause are considered to be essential to the work being performed hereunder. Prior to diverting any of the specified individuals to other programs, the Participant shall notify the Contracting Officer reasonably in advance and shall submit justification (including proposed substitutions) in sufficient detail to permit evaluation of the impact on the program. No diversion shall be made by the Contracting Officer: Provided, that the Contracting Officer may ratify in writing such diversion and such ratification shall constitute the consent of the Contracting officer required by this clause. The Key Personnel may be amended from time to time during the course of this Cooperative Agreement, as appropriate.

	<u>Name</u>	<u>Title</u>
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

## ARTICLE X -- PUBLIC INFORMATION RELEASE

The Participant shall coordinate in advance with the DOE Contracting Officer on all Public Information Releases to be issued by the Participant concerning work performed under this Cooperative Agreement. Such Public Information Releases shall not be issued without prior approval from the DOE Contracting Officer or the COTR.

## ARTICLE XI -- DESIGNATION OF THE DOE CONTRACTING OFFICER'S REPRESENTATIVES

<u>Title</u>	<u>Name</u>	<u>Address</u>
Contract Specialist	_____	_____
Contracting Officer's Technical Representative	_____	_____
Patent Counsel	_____	_____

The inspection and acceptance of all reports and other deliverables to be provided under this Cooperative Agreement shall be accomplished by the DOE Contracting Officer or his duly designated Government representative.

## ARTICLE XII -- INSURANCE AND INDEMNITY

The Participant shall procure and thereafter maintain workmen's compensation, employer's liability, comprehensive general liability (bodily injury), and comprehensive automobile liability (bodily injury and property damage) insurance, and such other insurance coverage as the Participant normally carries for similar projects. Provided that the Participant may with the approval of the DOE Contracting Officer maintain a self-insurance program; and further provided that, with respect to workmen's compensation, the Participant

is qualified pursuant to statutory authority. All insurance required pursuant to the provisions of this paragraph shall be in such form, in such amounts, and for such periods of time as the DOE Contracting Officer may approve, and with insurers approved by the DOE Contracting Officer.

(A) Hazards (Property Damage)

The Participant will provide hazard insurance (fire, windstorm, water damage, etc.) covering the materials, equipment, and structures acquired or constructed under this Cooperative Agreement. Proceeds from such insurance may be used to replace the damaged or destroyed property. If a decision is made not to replace or repair the property then the proceeds will be paid to DOE in the same ratio as the cost-share formula applicable to the budget period of the Cooperative Agreement when the equipment or property was purchased. This insurance will be in the amount of the purchase price or fair market value, whichever is greater.

(B) Flood Insurance

If funds under this Cooperative Agreement are used for acquisition or construction purposes in an identified flood plain area in the United States having special flood hazards, the Participant agrees to purchase flood insurance and comply with the provisions prescribed by the Federal Insurance Administration in 44 CFR, Subchapter B.

(C) Indemnity

The Participant shall indemnify the Government and its officers, agents, or employees for any and all liability, including litigation expenses and reasonable attorneys' fees, arising from suits, actions, or claims of any character for death, bodily injury, or loss of or damage to property or the environment to the extent resulting from the fault or negligence of the Participant in the implementation, operation, use, possession, handling, management, or disposition of the project under this Cooperative Agreement.

ARTICLE XIII -- BONDING FOR CONSTRUCTION

The Participant shall require any construction contractor or subcontractor to obtain performance and payment bonds for any construction project in accordance with practices approved by the Contracting Officer.

ARTICLE XIV -- TECHNICAL AND ECONOMIC EVALUATION

Ninety (90) days after the beginning of each budget period except for the last budget period, the Participant will submit to DOE for DOE approval a Project Evaluation Plan. This Plan will identify and describe the criteria by which the technical and economic feasibility of the project are to be measured. The Project Evaluation Plan as reviewed, revised, and approved by DOE will be used by the Participant for the preparation of a Project Evaluation Report to be submitted to the DOE at least 60 days prior to the end of the budget period for which the Project Evaluation Plan was prepared. The approved Plan will be used by DOE as the basis for the DOE decision to continue the project to the subsequent phase.

#### ARTICLE XV -- LEGAL NOTICE/DISCLAIMER

The following notice shall be contained in all reports intended to be released to the public:

This report was prepared by \_\_\_\_\_ pursuant to a cooperative agreement partially funded by the U.S. Department of Energy and neither \_\_\_\_\_ nor any of its subcontractors nor the U.S. Department of Energy, nor any person acting on behalf of either:

- (A) Makes any warranty or representation, express or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately-owned rights; or
- (B) Assumes any liabilities with respect to the use of, or for damages resulting from the use of, any information, apparatus, method or process disclosed in this report.

Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Department of Energy. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Department of Energy.

#### ARTICLE XVI - ORDER OF PRECEDENCE

In the event of an inconsistency between provisions of this agreement, the inconsistency shall be resolved by giving precedence as follows: (a) The Schedule Articles; (b) The General Provisions; (c) The Statement of Work; (d) Other provisions of the agreement whether incorporated by reference or otherwise.

#### ARTICLE XVII - GENERAL PROVISIONS

- (A) Intellectual Property - Attachment B
- (B) Incorporated by Reference
  - (1) 10 CFR Part 600 Subpart A and C
  - (2) OMB Circular<sup>\*</sup>

---

<sup>\*</sup> To be completed at time of award

ATTACHMENT A  
STATEMENT OF WORK

ATTACHMENT B

INTELLECTUAL PROPERTY PROVISIONS  
FOR  
COST SHARING COOPERATIVE AGREEMENT

## INTELLECTUAL PROPERTY PROVISIONS FOR COST SHARING COOPERATIVE AGREEMENT

	<u>Page No.</u>
1. <u>REPORTING OF ROYALTIES</u> (41 CFR 9-9.110).....	B - 5
2. <u>AUTHORIZATION AND CONSENT</u> (41 CFR 9-9.102.2).....	B - 5
3. <u>NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT</u> (41 CFR 9-9.104).....	B - 5
4. <u>PATENT INDEMNITY</u> (41 CFR 9-9.103-3(b)).....	B - 6
5. <u>ADDITIONAL TECHNICAL DATA REQUIREMENTS</u> (DEAR 952.227-73).....	B - 6
6. <u>RIGHTS TO PROPOSAL DATA</u> (DEAR 952.227-82).....	B - 7
7. <u>PATENT RIGHTS -- SMALL BUSINESS FIRMS OR NONPROFIT ORGANIZATIONS</u> (Other than GOCOs).....	B - 7
8. <u>PATENT RIGHTS</u> (Long Form).....	B - 14
9. <u>RIGHTS IN TECHNICAL DATA</u> .....	B - 26

### **Note to Participant:**

In these general provisions, the term "Contract" means Cooperative Agreement, and the term "Contractor" means Participant, unless the content of the clause clearly indicates otherwise. The use of the term "subcontractor" in any of the provisions means contractor to the Participant and all tiers of Subcontractor thereunder unless the conditions for use of a provision as set forth in the FAR or DEAR provide otherwise.

1. REPORTING OF ROYALTIES (41 CFR 9-9.110)

If the cooperative agreement is in an amount which exceeds \$10,000 and if any royalty payments are directly involved in the cooperative agreement or are reflected in the cooperative agreement price to the Government, the Participant agrees to report in writing to the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) during the performance of this cooperative agreement and prior to its completion or final settlement, the amount of any royalties or other payments paid or to be paid by it directly to others in connection with the performance of this cooperative agreement together with the names and addresses of licensors to whom such payments are made and either the patent numbers involved or such other information as will permit the identification of the patents or other basis on which the royalties are to be paid. The approval of DOE of any individual payments or royalties shall not stop the Government at any time from contesting the enforceability, validity or scope of, or title to, any patent under which a royalty or payments are made.

2. AUTHORIZATION AND CONSENT (41 CFR 9-9.102-2)

The Government hereby gives its authorization and consent for all use and manufacture of any invention described in and covered by a patent of the United States in the performance of this cooperative agreement or any part hereto or any amendment hereto or any subcontract hereunder (including all lower tier subcontracts).

3. NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT  
(41 CFR 9-9.104)

The provisions of this clause shall be applicable only if the amount of this cooperative agreement exceeds \$10,000.

- (a) The Participant shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this cooperative agreement of which the Participant has knowledge.
- (b) In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this cooperative agreement or out of the use of any supplies furnished or work or services performed hereunder, the Participant shall furnish to the Government when requested by the Contracting Officer all evidence and information in possession of the Participant pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the Participant has agreed to indemnify the Government.
- (c) This clause shall be included in all subcontracts.

4. PATENT INDEMNITY (41 CFR 9-9.103-3(b))

The Participant shall indemnify the Government and its officers, agents, and employees against liability, including costs, for infringement of U.S. Letters Patent (except U.S. Letters Patent issued upon an application which is now or may hereafter be kept secret or otherwise withheld from issue by order of the Government) resulting from the Participant's (a) furnishing or supplying standard parts or components which have been sold or offered for sale to public on the commercial open market; (b) utilizing its normal practices or methods which normally are or have been used in providing goods and services in the commercial open market in the performance of the cooperative agreement; or (c) utilizing any parts, components, practices, or methods to the extent to which the Participant has secured indemnification from liability. The foregoing indemnity shall not apply unless the Participant shall have been informed as soon as practicable by the Government of the suit or action alleging such infringement and shall have been given such opportunity as is afforded by applicable laws, rules, or regulations to participate in the defense thereof; and further, such indemnity shall not apply to a claimed infringement which is settled without the consent of the Participant unless required by final decree of a court of competent jurisdiction or to an infringement resulting from addition to or change in such supplies or components furnished or construction work performed for which addition or change was made subsequent to delivery or performance by the Participant.

5. ADDITIONAL TECHNICAL DATA REQUIREMENTS (DEAR 952.227-73)

- (a) In addition to the technical data specified elsewhere in this Cooperative Agreement to be delivered, the Contracting Officer may, at any time during the Cooperative Agreement performance or within 1 year after final payment, call for the Participant to deliver any technical data first produced or specifically used in the performance of this cooperative agreement, except technical data pertaining to items of standard commercial design.
- (b) The provisions of the Rights in Technical Data clause included in this Cooperative Agreement are applicable to all technical data called for under this Additional Technical Data Requirements clause. Accordingly, nothing contained in this clause shall require the Participant to actually deliver any technical data, the delivery of which is excused by Paragraph (e) of the Rights in Technical Data clause.
- (c) When technical data are to be delivered under this clause, the Participant will be compensated for appropriate costs for converting such data into the prescribed form for reproduction, and for delivery.

6. RIGHTS TO PROPOSAL DATA (DEAR 952.227-82)

Except for technical data contained on pages \_\_\_\_\_ of the Participant's proposal dated \_\_\_\_\_ which are asserted by the Participant as being proprietary data, it is agreed that, as a condition of the award of this cooperative agreement, and notwithstanding the provisions of any notice appearing on the proposal, the Government shall have the right to use, duplicate, disclose, and have others do so for any purpose whatsoever, the technical data contained in the proposal upon which this cooperative agreement is based.

7. PATENT RIGHTS -- SMALL BUSINESS FIRMS OR NONPROFIT ORGANIZATIONS (Other than GOCOs)

(a) Definitions.

- (1) "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code (U.S.C.) or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.).
- (2) "Subject invention" means any invention of the Contractor conceived or first actually reduced to practice in the performance of work under this cooperative agreement, provided that in the case of a variety of plant the date of determination (as defined in section 44(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d) must also occur during the period of contract performance.
- (3) "Practical application" means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms.
- (4) "Made" when used in relation to any invention means the conception or first actual reduction to practice of such invention.
- (5) "Small business firm" means a small business concern as defined at Section 2 of P.L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standard for small business concerns involved in Government procurement and subcontracting, at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

- (6) "Nonprofit organization" means a university or other institution of higher education or an organization of the type described in Section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c) and exempt from taxation under Section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.
- (7) "Patent counsel" means the Department of Energy (DOE) patent counsel assisting the DOE contracting activity.

(b) Allocation of principal rights.

- (1) The Contractor may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the Contractor retains title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.
- (2) (Reserved.)

(c) Invention disclosure, election of title and filing of patent application by Contractor.

- (1) The Contractor will disclose each subject invention to the Patent Counsel within 2 months after the inventor discloses it in writing to Contractor personnel responsible for patent matters. The disclosure to the Patent Counsel shall be in the form of a written report and shall identify the cooperative agreement under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding, to the extent known at the time of the disclosure of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the Patent Counsel, the Contractor will promptly notify the Patent Counsel of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the Contractor.
- (2) The Contractor will elect in writing whether or not to retain title to any such invention by notifying the Patent Counsel within 2 years of disclosure to the Patent Counsel. However,

in any case where publication, on sale or public use has initiated the 1-year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by Patent Counsel to a date that is no more than 60 days prior to the end of the statutory period.

- (3) The Contractor will file its initial patent application on a subject invention to which it elects to retain title within 1 year after election of title or, if earlier, prior in the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The Contractor will file patent applications in additional countries or international patent offices within either 10 months of the corresponding initial patent application or 6 months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.
- (4) Requests for extension of the time for disclosure to the Patent Counsel, election, and filing, under subparagraphs (1), (2), and (3) may, at the discretion of the Patent Counsel be granted.

(d) Conditions when the Government may obtain title.

The Contractor will convey to the DOE, upon written request, title to any subject invention:

- (1) If the Contractor fails to disclose or elect title to the subject invention within the times specified in (c) above, or elects not to retain title; provided that the DOE may only request title within 60 days after learning of the failure of the Contractor to disclose or elect within the specified times;
- (2) In those countries in which the Contractor fails to file patent applications within the times specified in (c) above; provided, however, that if the Contractor has filed a patent application in a country after the times specified in (c) above but prior to its receipt of the written request of the Patent Counsel, the Contractor shall continue to retain title in that country; or
- (3) In any country in which the Contractor decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in a reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum rights to Contractor and protection of the Contractor right to file.

- (1) The Contractor will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title except if the Contractor fails to disclose the subject invention within the times specified in (c) above. The Contractor's license extends to its domestic subsidiaries and affiliates, if any, within the corporate structure of which the Contractor is a part and includes the right to grant sublicenses of the same scope to the extent the Contractor was legally obligated to do so at the time the cooperative agreement was awarded. The license is transferable only with the approval of DOE except when transferred to the successor of the part of the Contractor's business to which the invention pertains.
- (2) The Contractor's domestic license may be revoked or modified by DOE to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR 404 and 10 CFR Part 781. This license will not be revoked in that field of use or the geographical area as in which the Contractor has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of DOE to the extent the Contractor, its licensees, or its domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.
- (3) Before revocation or modification of the license, DOE will furnish the Contractor a written notice of its intention to revoke or modify the license, and the Contractor will be allowed 30 days (or such other time as may be authorized by DOE for good cause shown by the Contractor) after the notice to show cause why the license should not be revoked or modified. The Contractor has the right to appeal, in accordance with 37 CFR 404 and 10 CFR Part 781, any decision concerning the revocation or modification of its license.

(f) Contractor action to protect the Government's interest.

- (1) The Contractor agrees to execute or to have executed and promptly deliver to the Patent Counsel all instruments necessary to:
  - (i) Establish or confirm the rights the Government has throughout the world in those subject inventions to which the Contractor elects to retain title, and

- (ii) Convey title to DOE when requested under (d) above and to enable the Government to obtain patent protection throughout the world in that subject invention.
- (2) The Contractor agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Contractor each subject invention made under this cooperative agreement in order that the Contractor can comply with the disclosure provisions of (c) above and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. The disclosure format should require, as a minimum, the information required by (c)(1) above. The contract shall instruct such employees through the employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to United States or foreign statutory bars.
- (3) The Contractor will notify the Patent Counsel of any decision not to continue prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than 30 days before the expiration of the response period required by the relevant patent office.
- (4) The Contractor agrees to include, within the specification of any United States patent applications and any patent issuing thereon covering a subject invention, the following statement "This invention was made with Government support under (identify the cooperative agreement) awarded by the Department of Energy. The Government has certain rights in this invention."
- (5) The Contractor agrees to:
  - (i) Upon request, provide a report prior to the close-out of the cooperative agreement listing all subject inventions or stating that there were none;
  - (ii) Provide, upon request, a copy of the patent application, filing date, serial number and title, patent number and issue date for any subject invention in any country in which the Contractor has applied for a patent; and
  - (iii) Provide upon request but not more than annually, listings of all subject inventions which were disclosed to DOE during the applicable reporting period.

(g) Subcontracts

- (1) The Contractor will include this clause, suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental, or research work to be performed by a small business firm or a domestic nonprofit organization. The subcontractor will retain all rights provided for the Contractor in this clause, and the Contractor will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.
- (2) The Contractor will include in all other subcontracts, regardless of tier, for experimental, developmental, demonstration, or research work the patent rights clause of 41 CFR 9-9.107-5(a) or 9-9.107-6 as appropriate, modified to identify the parties.
- (3) In the case of subcontracts at any tier, when the prime award with DOE was a contract (but not a grant or cooperative agreement) DOE, the subcontractor, and the Contractor agree that the mutual obligation of the parties created by this clause constitute a contract between the subcontractor and DOE with respect to those matters covered by this clause; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the Contracts Disputes Act in connection with proceedings under paragraph (j) of this clause.

(h) Reporting on utilization of subject inventions.

The Contractor agrees to submit on request periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Contractor or its licensees or assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Contractor, and such other data and information as DOE may reasonably specify. The Contractor also agrees to provide additional reports as may be requested by DOE in connection with any march-in proceeding undertaken by DOE in accordance with paragraph (j) of this clause. As required by 35 U.S.C. 202(c)(5), DOE agrees it will not disclose such information to persons outside the Government without permission of the Contractor.

(i) Preference for United States industry.

Notwithstanding any other provision of this clause, the Contractor agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject inventions in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject

invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by DOE upon a showing by the Contractor or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

(j) March-in-rights.

The Contractor agrees that with respect to any subject invention in which it has acquired title, DOE has the right in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of DOE to require the Contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the Contractor, assignee, or exclusive licensee refuses such a request, DOE has the right to grant such a license itself if DOE determines that:

- (1) Such action is necessary because the Contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;
- (2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Contractor, assignee, or their licensees;
- (3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the Contractor, assignee, or licensees; or
- (4) Such action is necessary because the agreement by paragraph (i) of this clause has not been obtained or waived or because of licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

(k) Special provisions for contracts with nonprofit organizations.

If the Contractor is a nonprofit organization it agrees that:

- (1) Rights to a subject invention in the United States may not be assigned without the approval of DOE, except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the Contractors;

- (2) The Contractor will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when DOE deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202 (e) and 37 CFR 401.10;
- (3) The balance of any royalties or income earned by the Contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, will be utilized for the support of scientific research or education; and
- (4) It will make efforts that are reasonable under the circumstances to attract licensees of subject inventions that are small business firms and that it will give a preference to a small business firm when licensing a subject invention if the Contractor determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided that the Contractor is also satisfied that the small business firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the Contractor. However, the Contractor agrees that the Secretary of Commerce may review the Contractor's licensing program and decisions regarding small business applicants, and the Contractor will negotiate changes to its licensing policies, procedures, or practices with the Secretary of Commerce when the Secretary of Commerce's review discloses that the Contractor could take reasonable steps to implement more effectively the requirements of this paragraph (k) (4).

- (1) Communications. The DOE central point of contact for communications or matters relating to this clause is the Patent Counsel.

## 8. PATENT RIGHTS (Long Form)

### (a) Definitions

- (1) "Subject Invention" means any invention or discovery of the Participant conceived or first actually reduced to practice in the course of or under this Cooperative Agreement, and includes any art, method, process, machine manufacture, design or composition of matter, or any new and useful improvement thereof, or any variety of plants, whether patented or unpatented under the Patent Laws of the United States of America or any foreign country.

- (2) "Contract" means any contract, grant, agreement, understanding, or other arrangement, which includes research, development, or demonstration work, and includes any assignment or substitution of parties.
- (3) "States and domestic municipal governments" means the States of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam, the Trust Territory of the Pacific Islands, and any political subdivision and agencies thereof.
- (4) "Government agency" includes an executive department, independent commission, board, office, agency, administration, authority, Government corporation, or other Government establishment of the Executive Branch of the Government of the United States of America.
- (5) "To the point of practical application" means to manufacture, in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.
- (6) "Patent Counsel" means the Department of Energy Patent Counsel assisting the DOE activity.

(b) Allocation of Principal Rights

- (1) Assignment to the Government -- The Participant agrees to assign to the Government the entire right, title, and interest throughout the world in and to each Subject Invention, except to the extent that rights are retained by the Participant under Subparagraph (b)(2) and Paragraph (c) of this clause.
- (2) Greater Rights Determinations -- The Participant or the employee-inventor with authorization of the Participant may request greater rights than the nonexclusive license and the foreign patent rights provided in Paragraph (c) of this clause on identified inventions in accordance with 41 CFR 9-9.109-6d. Such requests must be submitted to Patent Counsel (with notification by Patent Counsel to the Contracting Officer) at the time of the first disclosure pursuant to Subparagraph (e) (2) of this clause, or not later than 9 months after conception or first actual reduction to practice, whichever occurs first, or such longer periods as may be authorized by Patent Counsel (with notification by Patent Counsel to the Contracting Officer) for good cause shown in writing by the Participant.

(c) Minimum Rights to the Participant

- (1) Participant License -- The Participant reserves a revocable, non-exclusive, paid-up license in each patent application filed in any country on a Subject Invention and any resulting patent in which the Government acquires title. The license shall extend to the Participant's domestic subsidiaries and affiliates, if any, within the corporate structure of which the Participant is a part and shall include the right to grant sublicenses of the same scope to the extent the Participant was legally obligated to do so at the time the contract was awarded. The license shall be transferable only with approval of DOE except when transferred to the successor of that part of the Participant's business to which the invention pertains.
- (2) Revocation Limitations -- The Participant's nonexclusive license retained pursuant to Subparagraph (c)(1) of this clause and sublicenses granted thereunder may be revoked or modified by DOE, either in whole or in part, only to the extent necessary to achieve expeditious practical application of the Subject Invention under DOE's published licensing regulations (10 CFR 781), and only to the extent an exclusive license is actually granted. This license shall not be revoked in that field of use and/or the geographical areas in which the Participant, or its sublicensee, has brought the invention to the point of practical application and continues to make the benefits of the invention reasonably accessible to the public, or is expected to do so within a reasonable time.
- (3) Revocation Procedures -- Before modification or revocation of the license or sublicense, pursuant to Subparagraph (c)(2) of this clause, DOE shall furnish the Participant a written notice of its intention to modify or revoke the license and any sublicense thereunder, and the Participant shall be allowed 30 days, or such longer period as may be authorized by the Patent Counsel (with notification by Patent Counsel to the Contracting Officer), for good cause shown in writing by the Participant, after such notice to show cause why the license or any sublicense should not be modified or revoked. The Participant shall have the right to appeal, in accordance with 10 CFR 781, any decision concerning the modification or revocation of its license or any sublicense.
- (4) Foreign Patent Rights -- Upon written request to the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) and subject to DOE security regulations and requirements, there shall be reserved to the Participant, or the employee-inventor with authorization of the Participant, the patent rights to a Subject Invention in any foreign country where the Government has elected not to secure such rights provided:

- (i) The recipient of such rights, when specifically requested by DOE and 3 years after issuance of a foreign patent disclosing said Subject Invention, shall furnish DOE a report setting forth:
  - (A) The commercial use that is being made, or is intended to be made, of said invention, and
  - (B) The steps taken to bring the invention to the point of practical application or to make the invention available for licensing.
- (ii) The Government shall retain at least an irrevocable, nonexclusive, paid-up license to make, use, and sell the invention throughout the world by or on behalf of the Government (including any Government agency) and States and domestic municipal governments unless the Secretary or his designee determines that it would not be in the public interest to acquire the license for the State and domestic municipal governments.
- (iii) Subject to the rights granted in Subparagraphs (c)(1), (2), and (3) of this clause, the Secretary or his designee shall have the right to terminate the foreign patent rights granted in this Subparagraph (c)(4) in whole or in part unless the recipient of such rights demonstrates to the satisfaction of the Secretary or his designee that effective steps necessary to accomplish substantial utilization of the invention have been taken or within a reasonable time will be taken.
- (iv) Subject to the rights granted in Subparagraphs (c)(1), (2), and (3) of this article, the Secretary or his designee shall have the right, commencing 4 years after foreign patent rights are accorded under this Subparagraph (c)(4), to require the granting of a nonexclusive or partially exclusive license to a responsible applicant or applicants, up on terms reasonable under the circumstances, and in appropriate circumstances to terminate said foreign patent rights in whole or in part, following a hearing upon notice thereof to the public, upon a petition by an interested person justifying such hearing:
  - (A) If the Secretary or his designee determines, upon review of such material as he deems relevant, and after the recipient of such rights or other interested person has had the opportunity to provide such relevant and material information as the Secretary or his designee may require that such foreign patent rights have tended substantially to lessen

competition, or to result in undue market concentration in any section of the United States in any line of commerce to which the technology relates; or

- (B) Unless the recipient of such rights demonstrates to the satisfaction of the Secretary or his designee at such hearing that the recipient has taken effective steps or within a reasonable time thereafter is expected to take such steps, necessary to accomplish substantial utilization of the invention.

(d) Filing of Patent Applications

- (1) With respect to each Subject Invention in which the Participant or the inventor requests foreign patent rights in accordance with Subparagraph (c)(4) of this clause, a request may also be made for the right to file and prosecute the U.S. application on behalf of the U.S. Government. If such request is granted, the Participant or inventor shall file a domestic patent application on the invention within 6 months after the request for foreign patent rights is granted, or such longer period of time as may be approved by Patent Counsel for good cause shown in writing by the requestor. With respect to the invention, the requestor shall promptly notify the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) of any decision not to file an application.
- (2) For each Subject Invention on which a domestic patent application is filed by the Participant or inventor, the Participant or inventor shall:
  - (i) Within 2 months after the filing of a patent application or within 2 months after submission of the invention disclosure if the patent application has been filed previously, deliver to the Patent Counsel a copy of the application as filed including the filing date and serial number;
  - (ii) Within 6 months after filing the application or within 6 months after submitting the invention disclosure if the application has been filed previously, deliver to the Patent Counsel a duly executed and approved assignment to the Government, on a form specified by the Government;
  - (iii) Provide the Patent Counsel with the original patent grant promptly after a patent is issued on the application; and

- (iv) Not less than 30 days before the expiration of the response period for any action required by the Patent and Trademark Office, notify the Patent Counsel of any decision not to continue prosecution of the application.
- (3) With respect to each Subject Invention in which the Participant or inventor has requested foreign patent rights, the Participant or inventor shall file a patent application on the invention in each foreign country in which such request is granted in accordance with applicable statutes and regulations and within one of the following periods:
  - (i) Eight months from the date of filing a corresponding United States application, or if such an application is not filed, 6 months from the date the request was granted;
  - (ii) Six months from the date a license is granted by the Commissioner of Patents and Trademarks to file the foreign patent application where such filing has been prohibited by security reasons; or
  - (iii) Such longer periods as may be approved by the Patent Counsel for good cause shown in writing by the Participant or inventor.
- (4) Subject to the license specified in Subparagraphs (c)(1), (2) and (3) of this clause, the Participant or inventor agrees to convey to the Government upon request the entire right, title, and interest in any foreign country in which the Participant or inventor fails to have a patent application filed in accordance with Subparagraph (d)(3) of this clause, or decides not to continue prosecution or to pay any maintenance fees covering the invention. To avoid forfeiture of the patent application or patent, the Participant or inventor shall, not less than 60 days before the expiration period for any action required by any Patent Office, notify the Patent Counsel of such failure or decision, and deliver to the Patent Counsel the executed instruments necessary for the conveyance specified in this paragraph.

(e) Invention Identification, Disclosures, and Reports

- (1) The Participant shall establish and maintain active and effective procedures to ensure that Subject Inventions are promptly identified and timely disclosed. These procedures shall include the maintenance of laboratory notebooks or equivalent records and any other records that are reasonably necessary to document the conception and/or the first actual reduction to practice of Subject Inventions, and records which show that the procedures for identifying and disclosing the inventions are followed. Upon request the Participant shall

furnish the Contracting Officer a description of these procedures so that he may evaluate and determine their effectiveness.

- (2) The Participant shall furnish the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) on a DOE-approved form:
  - (i) A written report containing full and complete technical information concerning each Subject Invention within 6 months after conception or first actual reduction to practice whichever occurs first in the course of or under this cooperative agreement but in any event prior to any sale, public use, or public disclosure of such invention known to the Participant. The report shall identify the contract and inventor and shall be sufficiently complete in technical detail and appropriately illustrated by sketch or diagram to convey to one skilled in the art to which the invention pertains a clear understanding of the nature, purpose, operation, and to the extent known the physical, chemical, biological, or electrical characteristics of the invention. The report should also include any request for foreign patent rights under Subparagraph (c)(4) of this clause and any request to file a domestic patent application under (d)(1) of this clause. However, such request shall be made within the period set forth in Subparagraph (b)(2) of this clause. When an invention is reported under this Subparagraph (e)(2)(i), it shall be presumed to have been conceived or first actually reduced to practice in the course of or under the contract, unless the Participant contends it was not so made, in accordance with Subparagraph (g)(2) (ii) of this clause.
  - (ii) Upon request, but not more than annually, interim reports on a DOE-approved form listing Subject Inventions and subcontracts awarded containing a Patent Rights clause for that period and certifying that:
    - (A) The Participant's procedures for identifying and disclosing Subject Inventions as required by this Paragraph (e) have been followed throughout the reporting period;
    - (B) All Subject Inventions have been disclosed or that there are no such inventions; and
    - (C) All subcontracts containing a Patent Rights clause have been reported or that no such subcontracts have been awarded; and

(iii) A final report on a DOE-approved form within 3 months after completion of the contract work listing all Subject Inventions and all subcontracts awarded containing a Patent Rights clause and certifying that:

(A) All Subject Inventions have been disclosed or that there were no such inventions; and

(B) All subcontracts containing a Patent Rights clause have been reported or that no such subcontracts have been awarded.

(3) The Participant shall obtain patent agreements to effectuate the provisions of this clause from all persons in its employ who perform any part of the work under the cooperative agreement except nontechnical personnel, such as clerical employees and manual laborers.

(4) The Participant agrees that the Government may duplicate and disclose Subject Invention disclosures and all other reports and papers furnished or required to be furnished pursuant to this clause. If the Participant is to file a foreign patent application on a Subject Invention, the Government agrees, upon written request, to use its best efforts to withhold public disclosure of such invention disclosures until the expiration of the time period specified in Subparagraph (d)(1) of this clause, but in no event shall the Government or its employees be liable for any publication thereof.

(f) Publication

It is recognized that during the course of the work under this cooperative agreement, the Participant or its employees may from time to time desire to release or publish information regarding scientific or technical developments conceived or first actually reduced to practice in the course of or under this cooperative agreement. In order that public disclosure of such information will not adversely affect the patent interests of DOE or the Participant, patent approval for release or publication shall be secured from Patent Counsel prior to any such release or publication.

(g) Forfeiture of Rights in Unreported Subject Inventions

(1) The Participant shall forfeit to the Government, at the request of the Secretary or his designee, all rights in any Subject Invention which the Participant fails to report to the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) within 6 months after the time the Participant:

(i) Files or causes to be filed a United States or foreign patent application thereon; or

- (ii) Submits the final report required by Subparagraph (e)(2)(iii) of this clause, whichever is later.
- (2) However, the Participant shall not forfeit rights in a Subject Invention if, within the time specified in (1)(i) or (1)(ii) of this Paragraph (g), the Participant:
  - (i) Prepares a written decision based upon a review of the record that the invention was neither conceived nor first actually reduced to practice in the course of or under the cooperative agreement and delivers the same to Patent Counsel (with notification by Patent Counsel to the Contracting Officer); or
  - (ii) Contending that the invention is not a Subject Invention, the Participant nevertheless discloses the invention and all facts pertinent to this contention to the Patent Counsel (with notification by Patent Counsel to the Contracting Officer); or
  - (iii) Establishes that the failure to disclose did not result from the Participant's fault or negligence.
- (3) Pending written assignment of the patent application and patents on a Subject Invention determined by the Secretary or his designee to be forfeited (such determination to be a final decision under the Disputes clause of this cooperative agreement), the Participant shall be deemed to hold the invention and the patent applications and patents pertaining thereto in trust for the Government. The forfeiture provision of this Paragraph (g) shall be in addition to and shall not supersede other rights and remedies which the Government may have with respect to Subject Inventions.

(h) Examination of Records Relating to Inventions

- (1) The Contracting Officer or his authorized representative, until the expiration of 3 years after final payment under this cooperative agreement, shall have the right to examine any books (including laboratory notebooks), records, documents, and other supporting data of the Participant which the Contracting Officer or his authorized representative reasonably deems pertinent to the discovery or identification of Subject Inventions or to determine compliance with the requirements of this clause.
- (2) The Contracting Officer or his authorized representative shall have the right to examine all books (including laboratory notebooks), records, and documents of the Participant relating to the conception or first actual reduction to practice of inventions in the same field of technology as the work under

this cooperative agreement to determine whether any such inventions are Subject Inventions, if the Participant refuses or fails to:

- (i) Establish the procedures of Subparagraph (e)(1) of this clause; or
- (ii) Maintain and follow such procedures; or
- (iii) Correct or eliminate any material deficiency in the procedures within 30 days after the Contracting Officer notifies the Participant of such a deficiency.

(i) Withholding of Payment (Not Applicable to Subcontracts)

- (1) Any time before final payment of the amount of this cooperative agreement, the Contracting Officer may, if he deems such action warranted, withhold payment until a reserve not exceeding \$50,000 or 5 percent of the amount of this cooperative agreement, whichever is less, shall have been set aside if in his opinion the Participant fails to:

- (i) Establish, maintain, and follow effective procedures for identifying and disclosing Subject Inventions pursuant to Subparagraph (e)(1) of this clause; or
- (ii) Disclose any Subject Invention pursuant to Subparagraph (e)(2)(i) of this clause; or
- (iii) Deliver the interim reports pursuant to Subparagraph (e)(2)(ii) of this clause; or
- (iv) Provide the information regarding subcontracts pursuant to Subparagraph (j)(5) of this clause; or
- (v) Convey to the Government, using a DOE-approved form, the title and/or rights of the Government in each Subject Invention as required by this clause.

- (2) The reserve or balance shall be withheld until the Contracting Officer has determined that the Participant has rectified whatever deficiencies exist and has delivered all reports, disclosures, and other information required by this clause.
- (3) Final payment under this cooperative agreement shall not be made by the Contracting Officer before the Participant delivers to Patent Counsel all disclosures of Subject Inventions and other information required by Subparagraph (e)(2)(i) of this clause, the final report required by Subparagraph (e)(2)(iii) of this clause, and Patent Counsel has issued a patent clearance certification to the Contracting Officer.

- (4) The Contracting Officer may, in his discretion, decrease or increase the sums withheld up to the maximum authorized above. No amount shall be withheld under this paragraph while the amount specified by this paragraph is being withheld under other provisions of the cooperative agreement. The withholding of any amount or subsequent payment thereof shall not be construed as a waiver of any rights accruing to the Government under this contract.

(j) Subcontracts

- (1) The Participant will include the attached clause (Patent Rights -- Small Business Firms or Nonprofit Organizations - other than GOCOs), suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental, or research work to be performed in the United States by a small business firm or a nonprofit organization. In all other subcontracts, regardless of tier for experimental, developmental, demonstration, or research work, the Participant will include a Patent Rights clause as approved by the Contracting Officer.
- (2) Except as may be otherwise provided in this clause, the Participant shall not, in any subcontract by using a subcontract as consideration therefor, acquire any rights in its subcontractor's subject invention for the Participant's own use (as distinguished from such rights as may be required solely to fulfill the Participant's contract obligations to the Government in the performance of this contract).
- (3) All invention disclosures, reports, instruments, and other information required to be furnished by the subcontractor to DOE, under the provisions of a Patent Rights clause in any subcontract hereunder may, in the discretion of the Contracting Officer, be furnished to the Participant for transmission to DOE.
- (4) The Participant shall promptly notify the Contracting Officer in writing upon the award of any subcontract containing a Patent Rights clause by identifying the subcontractor, the work to be performed under the subcontract, and the dates of award and estimated completion. Upon the request of the Contracting Officer, the Participant shall furnish a copy of the subcontract.
- (5) The Participant shall identify all subject inventions of the subcontractor of which it acquires knowledge in the performance of this cooperative agreement and shall notify the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) promptly upon the identification of the inventions.

- (6) It is understood that the Government is a third party beneficiary of any subcontract clause granting rights to the Government in subject inventions, and the Participant hereby assigns to the Government all rights that the Participant would have to enforce the subcontractor's obligations for the benefit of the Government with respect to subject inventions. The Participant shall not be obligated to enforce the agreements of any subcontractor hereunder relating to the obligations of the subcontractor to the Government regarding subject inventions.

(k) Background Patents

- (1) "Background Patent" means a domestic patent covering an invention or discovery which is not a subject invention and which is owned or controlled by the Participant at any time through the completion of this cooperative agreement:
- (i) Which the Participant, but not the Government, has the right to license to others without obligation to pay royalties thereon, and
  - (ii) Infringement of which cannot reasonably be avoided upon the practice of any specific process, method, machine, manufacture, or composition of matter (including relatively minor modifications thereof) which is a subject of the research, development, or demonstration work performed under this contract.
- (2) The Participant agrees to and does hereby grant to the Government a royalty-free, nonexclusive license under any Background Patent for purposes of practicing a subject of this contract by or for the Government in research, development, and demonstration work only.
- (3) The Participant also agrees that upon written application by DOE it will grant to responsible parties, for purposes of practicing a subject of this contract, nonexclusive licenses under any Background Patent on terms that are reasonable under the circumstances. If, however, the participant believes that exclusive or partially exclusive rights are necessary to achieve expeditious commercial development or utilization, then a request may be made to DOE for DOE approval of such licensing by the Participant.
- (4) Notwithstanding the foregoing paragraph (k)(3), the contractor shall not be obligated to license any background patent if the contractor demonstrates to the satisfaction of the Head of the Agency or designee that:
- (i) a competitive alternative to the subject matter covered by said background patent is commercially available or readily introducable from one or more other sources; or

- (2) "Proprietary data" means technical data which embody trade secrets developed at private expense, such as design procedures or techniques, chemical composition of materials, or *manufacturing methods, processes, or treatments, including* minor modifications thereof, provided that such data:
- (i) Are not generally known or available from other sources without obligation concerning their confidentiality;
  - (ii) Have not been made available by the owner to others without obligation concerning its confidentiality; and
  - (iii) Are not already available to the Government without obligation concerning their confidentiality.
- (3) "Contract data" means technical data first produced in the performance of this Cooperative Agreement, technical data which are specified to be delivered under this Cooperative Agreement, technical data that may be called for under the Additional Technical Data Requirements clause of this Cooperative Agreement, if any, or technical data actually delivered in connection with this Cooperative Agreement.
- (4) "Unlimited rights" means rights to use, duplicate, or disclose technical data, in whole or in part, in any manner and for any purpose whatsoever, and to permit others to do so.
- (5) "Government" means the Government of the United States of America.
- (6) "Cooperative Agreement" means this Cooperative Agreement \_\_\_\_\_ between \_\_\_\_\_ and the Department of Energy.
- (7) "Know-how" means unpatented technical information, assistance, training or expertise including drawings, designs, specifications, blueprints, or manuals owned or controlled by the Participant.
- (8) "Facility" means the \_\_\_\_\_ facility that is to be designed, constructed, and operated as part of this Cooperative Agreement.
- (9) "Participant" means \_\_\_\_\_, signatory to this Cooperative Agreement.

(b) Allocation of rights.

(1) The Government shall have:

- (i) Unlimited rights in contract data except as otherwise provided below with respect to proprietary data;

- (ii) the contractor or its licenses are supplying the subject matter covered by said background patent in sufficient quantity and at reasonable prices to satisfy market needs, or have taken effective steps to so supply the subject matter.

(l) Reserved

(m) Limitation of Rights

Nothing contained in this Patent Rights article shall be deemed to give the Government any rights with respect to any invention other than a Subject Invention except as set forth in the Patent Rights clause of this cooperative agreement with respect to Background Patents and the Facilities License.

(n) Facility Patent License

The Contractor agrees to and does hereby grant to the Government or others acting on its behalf, an irrevocable non-exclusive paid-up license in and to any invention of discovery of the Contractor which is incorporated or embodied in the design or construction or utilized in the operation of the Facility or which covers articles, materials or products manufactured at the Facility (1) to practice or have practiced by or for the Government at the Facility, and (2) to transfer such license with the transfer of that Facility. Further, the Contractor agrees to obtain an equivalent license from its subcontractors and licensors, if any.

## 9. RIGHTS IN TECHNICAL DATA

(a) Definitions.

- (1) "Technical data" means recorded information, regardless of form or characteristic, of a scientific or technical nature. It may, for example, document research, experimental, developmental, or demonstration, or engineering work, or be usable or used to define a design or process, or to procure, produce, support, maintain, or operate material. The data may be graphic or pictorial delineations in media such as drawings or photographs, text in specifications or related performance or design type documents or computer software (including computer programs, computer software data bases, and computer software documentation).

Examples of technical data include research and engineering data, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identification, and related information. Technical data as used herein do not include financial reports, cost analyses, and other information incidental to Cooperative Agreement administration.

- (ii) The right to remove, cancel, correct, or ignore any marking not authorized by the terms of this Cooperative Agreement on any technical data furnished hereunder, if in response to a written inquiry by DOE concerning the propriety of the markings, the Participant fails to respond thereto within 60 days or fails to substantiate the propriety of the markings. In either case, DOE will notify the Participant of the action taken;
- (iii) No rights under this Cooperative Agreement in any technical data which are not Contract Data.

(2) The Participant shall have:

- (i) The right to withhold proprietary data in accordance with the provisions of this clause; and
  - (ii) The right to use for its private purposes, subject to patent, security, or other provisions of this Cooperative Agreement, Contract Data it first produces in the performance of this Cooperative Agreement, provided the data requirements of this Cooperative Agreement have been met as of the date of the private use of such data. The Participant agrees that to the extent it receives or is given access to proprietary data or other technical, business, or financial data in the form of recorded information from DOE or a DOE Contractor or subcontractor, the Participant shall treat such data in accordance with any restrictive legend contained thereon unless use is specifically authorized by prior written approval of the Contracting Officer.
- (3) Nothing contained in this Rights of Technical Data clause shall imply a license to the Government under any patent or be construed as affecting the scope of any licenses or other rights otherwise granted to the Government under any Patent.

(c) Copyrighted material.

- (1) The Participant shall not, without prior written authorization of the Patent Counsel, establish a claim to statutory copyright in any contract data first produced in the performance of this Cooperative Agreement. To the extent such authorization is granted, the Government reserves for itself and others acting on its behalf a royalty-free, nonexclusive, irrevocable, worldwide license for Governmental purposes to publish, distribute, translate, duplicate, exhibit, and perform any such data copyrighted by the Participant.
- (2) The Participant agrees not to knowingly include in the technical data delivered under this Cooperative Agreement any material copyrighted by the Participant and not to knowingly

include any material copyrighted by others, without first granting or obtaining at no cost a license therein for the benefit of the Government of the same scope as set forth in Paragraph (c)(1) above. If such royalty-free license is unavailable and the Participant nevertheless determines that such copyrighted material must be included in the technical data to be delivered, rather than merely incorporated therein by reference, the Participant shall obtain the written authorization of the Contracting Officer to include such copyrighted material in the technical data prior to its delivery.

- (3) The Participant agrees that upon written application by the DOE it will grant to the extent practicable a non-exclusive license to responsible third parties in any copyrighted work that is utilized, tested or embodied by the Participant in the performance of work under this Cooperative Agreement or subcontract to practice the \_\_\_\_\_ system which is the subject of this Cooperative Agreement on terms and conditions which are reasonable under the circumstances.
- (d) Subcontracting. It is the responsibility of the Participant to obtain from its contractors and subcontractors technical data and rights therein, on behalf of the Government, necessary to fulfill the Participant's obligations to the Government with respect to such data. In the event of refusal by a subcontractor to accept a clause affording the Government such rights, the Participant shall:
  - (1) Promptly submit written notice to the Contracting Officer of the Cooperative Agreement setting forth reasons for the subcontractor refusal and other pertinent information which may expedite disposition of the matter; and
  - (2) Not proceed with the subcontract without the written authorization of the Contracting Officer.
  - (3) As used in this Rights in Technical Data clause, the term Contractor or Subcontractor includes any person or entity responsible for fulfilling the Participant's obligations to the Government with respect to technical data.
- (e) Withholding of proprietary data. Notwithstanding the inclusion of the additional Technical Data Requirements Clause in this Cooperative Agreement or any provision of this Cooperative Agreement specifying the delivery of technical data, the Participant may withhold proprietary data from delivery, provided that the Participant furnishes in lieu of any such proprietary data so withheld technical data disclosing the source, size, configuration, mating and attachment characteristics, functional characteristics, and performance requirements ("Form, Fit, and Function" data, e.g., specification control drawings, catalog sheets, envelope drawings, etc., or a general description of such proprietary data where "Form, Fit, and Function" data are not applicable). The Government shall

acquire no rights to any proprietary data so withheld except that such data shall be subject to the "Inspection rights" provisions of Paragraph (f), the "Limited rights in proprietary data" provisions of Paragraph (g), and, if included, the "Participant licensing" provisions of Paragraph (h), the "Availability of contract and other data" provisions of Paragraph (i), the "Commercialization of \_\_\_\_\_ technology" provisions of Paragraph (j).

- (f) Inspection rights. Except as may be otherwise specified in this Cooperative Agreement for specific items of proprietary data which are not subject to this paragraph, the Contracting Officer's representatives, at all reasonable times up to 3 years after final payment under this Cooperative Agreement, may inspect at the participants facility any proprietary data withheld under Paragraph (e) for the purpose of verifying that such data properly fell within the withholding provisions of Paragraph (e) or for evaluating work performance.
- (g) Limited rights in proprietary data. Except as may be otherwise specified in this Cooperative Agreement as technical data which are not subject to this paragraph, the Participant shall, upon written request from the Contracting Officer at any time prior to 3 years after final payment under this Cooperative Agreement, promptly deliver to the Government any "proprietary data" withheld pursuant to Paragraph (e) of the Rights in Technical Data clause of this Cooperative Agreement. The following legend and no other is authorized to be affixed on any "proprietary data" delivered pursuant to this provision, provided the "proprietary data" meets the conditions for initial withholding under Paragraph (e) of the Rights in Technical Data clause. The Government will thereafter treat the "proprietary data" in accordance with such legend.

#### LIMITED RIGHTS LEGEND

This "proprietary data" furnished under Cooperative Agreement \_\_\_\_\_ with the United States Department of Energy may be duplicated and used by the Government with the express limitations that the "proprietary data" may not be disclosed outside the Government or be used for purposes of manufacture without prior permission of the Participant, except that further disclosure or use may be made solely for the following purposes:

- (1) This "proprietary data" may be disclosed for evaluation purposes under the restriction that the "proprietary data" be retained in confidence and not be further disclosed;
- (2) This "Proprietary Data" may be disclosed to other contractors participating in the Government's program of which this Cooperative Agreement is a part, for information or use in connection with the work performed under these contracts and under the restriction that the

"Proprietary Data" be retained in confidence and not be further disclosed; or

- (3) This "proprietary data" may be used by the Government or others on its behalf for emergency repair or overhaul work at the Facility under the restriction that the "proprietary data" be retained in confidence and not be further disclosed .

This legend shall be marked on any reproduction of this data in whole or in part.

- (h) Contract licensing. Except as may be otherwise specified in this contract as technical data not subject to this paragraph, the contractor agrees that upon written application by DOE, it will grant to the Government and responsible third parties, for purpose of practicing a subject of this contract, a nonexclusive license in any contract data which are proprietary data, on terms and conditions reasonable under the circumstances including appropriate provisions for confidentiality; provided, however, the contractor shall not be obligated to license any such data if the contractor demonstrates to the satisfaction of the Head of the Agency or designee that:

- (1) Such data are not essential to the manufacture or practice of hardware designed or fabricated, or processes developed, under this contract;
- (2) Such data, in the form of results obtained by their use, have a commercially competitive alternative available or readily introducable from one or more other sources.
- (3) Such data, in the form of results obtained by their use, are being supplied by the contractor or its licensees in sufficient quantity and at reasonable prices to satisfy market needs, or the contractor or its licensees have taken effective steps or within a reasonable time are expected to take effective steps to so supply such data in the form of results obtained by their use; or
- (4) Such data, in the form of results obtained by their use, can be furnished by another firm skilled in the art of manufacturing items or performing processes of the same general type and character necessary to achieve the contract results.

- (i) Availability of contract and other data.

- (1) The Participant will, for the entire period of Participant 's participation in the project at the Facility (including operation of the Facility) and for three years thereafter, whether or not under a Government Cooperative Agreement, keep and maintain all technical data, including proprietary data and

data obtained from subcontractors and licensors, necessary to construct and/or operate the Facility, and all data including business and financial data necessary to evaluate the technical and economic operation of the Facility. During the entire period of construction and/or operation of the Facility, regardless of whether the Government participates past Phase I, the Participant shall permit the Government and its representative the right to inspect at the Facility any data kept and maintained pursuant to this paragraph. The Participant shall, after termination of the Government's participation in the project at the facility, periodically deliver reports to the Government on the construction and operation of the facility, which reports shall not include proprietary data.

- (2) If the Participant withdraws from this Cooperative Agreement or defaults after Phases IA, IB, or II, the Government shall have the right to have all data kept and maintained pursuant to Paragraph (1) above, delivered to the Government or otherwise disposed of as the Contracting Officer shall direct upon such termination. Any proprietary data delivered pursuant to this paragraph shall be marked as provided in Paragraph (g) above with the addition to the legend thereof as follows: (4) This "proprietary data" may be used by Government or others on its behalf in confidence to the extent necessary to enable the Government to complete Phases II and/or III.
- (3) The Participant agrees to and does hereby grant to the Government or others acting on its behalf, an irrevocable non-exclusive paid-up license in and to any proprietary data of the Participant which are incorporated or embodied in the design or construction or utilized in the operation of the Facility: 1) to practice, or to have practiced, by or for the Government at the Facility, and 2) to transfer such license with the transfer of that Facility. Further, the Participant agrees to obtain an equivalent license from its contractors, subcontractors, and licensors, if any. The license granted pursuant to this subparagraph shall be for the limited purpose of completion, repair or operation of the demonstration facility.

(j) Commercialization of \_\_\_\_\_ Technology.

- (1) In addition to or in assistance of any rights acquired by the Government in \_\_\_\_\_ Technology from the Participant under paragraph (k) of the Patents Clause and paragraph (h) of the Rights in Technical Data Clause, the Participant agrees to negotiate in good faith with a responsible applicant and to conclude an agreement with such applicant to provide a commercial-size facility incorporating \_\_\_\_\_ Technology in the United States equal to or a scaled-up or modified version of the \_\_\_\_\_ facility which is a subject of this Cooperative Agreement. The Agreement shall, as appropriate to the

circumstances, include provisions for licensing patented and unpatented \_\_\_\_\_ Technology including background patents, waived subject inventions, proprietary data, know-how and copyrighted works including improvements or enhancements of any of the foregoing as well as provisions for technical assistance and training.

- (2) The services and/or licenses specified in (j)(1) of this paragraph shall be made available to responsible applicants to construct or have constructed, operate or have operated a facility incorporating \_\_\_\_\_ Technology in the United States under reasonable terms and conditions taking into consideration accepted licensing standards or norms in the relevant U.S. industry as well as accepted levels of return on investment for such activities and/or services.
- (3) In the event that the Participant and the applicant cannot reach agreement after one year from the start of diligent and responsible negotiations between them, then the DOE by its Secretary or designee, reserves the option to submit, with the approval of the said applicant, unresolved licensing issues to arbitration in New York under the rules of the American Arbitration Association. The Participant agrees to be bound by the results of the Arbitration.
- (4) The provisions of subparagraphs (1), (2), and (3) of this paragraph (j) shall not apply as long as the Participant or its licensees are supplying U.S. market needs at reasonable prices for \_\_\_\_\_ systems.
- (5) The Participant agrees to obtain sufficient rights to meet its commitments to commercialize and/or license \_\_\_\_\_ Technology.

ATTACHMENT C

FEDERAL REPORTING REQUIREMENTS CHECKLIST

The Participant shall prepare and submit (postage prepaid) the plans and reports indicated on the attached Reporting Requirements Checklist. The Participant shall prepare the specified plans and reports in accordance with the formats and structure set forth in DOE Order 1332.2. The level of detail the Participant must provide in any required plans and reports shall be commensurate with the scope and complexity of the task and the reporting categories specified elsewhere in this Cooperative Agreement. The Participant shall be responsible for levying appropriate reporting requirements on any contractor/subcontractor in such a manner to ensure that data submitted by the contractor/subcontractor to the Participant is compatible with the data elements that the Participant is responsible for submitting to DOE.

# FINANCIAL ASSISTANCE REPORTING REQUIREMENTS CHECKLIST

Title of Assistance Instrument: \_\_\_\_\_

Assistance Instrument No.: \_\_\_\_\_

NOTE: Required report deliverables are identified with an X.

Report/Plan	Form No. <u>a/</u>	Report Disposition <u>b/</u>	Report Freq. <u>c/</u>	No. of Copies	Addressees <u>d/</u>
<b>A. PROGRAM/PROJECT MANAGEMENT REPORTS:</b>					
<input checked="" type="checkbox"/> Federal Assistance Milestone Plan	EIA-459B	N/A	O X Q	1, 3	A, B
<input type="checkbox"/> Federal Assistance Budget Information Form	EIA-459C	N/A	O X	1, 3	A, B
<input type="checkbox"/> Federal Assistance Management Summary Report	EIA-459E	N/A	O, M	1, 4	A, B
<input type="checkbox"/> Federal Assistance Program/Project Status Report	EIA-459F	N/A	M	1, 3	A, B
<input checked="" type="checkbox"/> Financial Status Report	SF-269	N/A	M	1, 3	A, B
<input checked="" type="checkbox"/> Interim Report	None	N/A	A	1, 3	A, B
<b>B. TECHNICAL INFORMATION REPORTS:</b>					
<input checked="" type="checkbox"/> Technical Progress Report	None				
<input checked="" type="checkbox"/> Draft for Review		N/A	Q	1, 4	A, B
<input checked="" type="checkbox"/> Final for Approval		N/A	Q	1, 4	
<input type="checkbox"/> Topical Report	None				
<input checked="" type="checkbox"/> Draft for Review		N/A	A	1, 4	A, B
<input checked="" type="checkbox"/> Final for Approval		N/A	A	1, 4	
<input checked="" type="checkbox"/> Final Technical Report	None				
<input checked="" type="checkbox"/> Draft for Review		N/A	F	1, 5	A, B
<input checked="" type="checkbox"/> Final for Approval		N/A	F	1, 5	A, B
<b>C. SPECIAL INSTRUCTIONS:</b> (SEE ATTACHED)					

[continued on reverse]

### FOOTNOTE EXPLANATIONS

- a/ The forms identified are available from the cognizant Contract Specialist. If alternate forms are used, prior approval by the designated COTR is required.
- b/ This column indicates the Government's intended disposition of required technical report deliverables. "P" indicates intention to publish the report; "A" indicates intention to announce only; and "S" indicates intention to store/archive only. Specifically, the following instructions are applicable with respect to technical report disposition:
- Reports identified with a "P" require simultaneous submission of a draft report and METC Form 138, with Part A of this form completed, to Addressee B, METC Contractor Reports Receipt Coordinator. The number of final copies of reports to be published which are identified for submission to Addressee B shall include one reproducible master copy (i.e., camera-ready copy). Instructions for preparation of camera-ready copies are included in the Guidelines for Preparation of Reproducible Master Camera-Ready Copy of Reports clause of the agreement. All other required copies to be submitted to Addressees A and B must be good-quality duplicates suitable for microficheing.
  - Reports identified with an "A" require simultaneous submission of final reports (unless drafts are required to be submitted) and METC Form 138 to Addressee B. The number of final copies of reports to be announced only which are identified for submission to Addressees A and B must be good quality duplicates suitable for microficheing.
  - Reports identified with an "S" require submission of final reports. The number of final copies of reports to be stored/archived only which are identified for submission to Addressees A and B must be good quality duplicates suitable for microficheing.
- c/ See definitions for frequency codes and report due date requirements below.
- d/ See Report Distribution Addressee List of the agreement.

### REPORT FREQUENCY CODES AND DUE DATES

Code	Definition	Event	Calendar Days After Event
A	As required	Precipitating event	1 <sup>1/</sup>
C	Financial assistance change	Change to financial assistance instrument	15
F	Final	End of effort	90
M	Monthly	End of calendar month	20
O	Once after award	Award budget period	30
Q	Quarterly	End of budget period quarter	30
S	Semi-annually	End of budget period half year	30
X	With application	Submission of application	02 <sup>2/</sup>
Y	Yearly	End of budget period	90

<sup>1</sup> For due dates of Topical Reports and other plans/documents, see the Statement of Work.

<sup>2</sup> Submit with application.

## DISTRIBUTION

SPECIAL INSTRUCTIONS  
FEDERAL ASSISTANCE REPORTING CHECKLIST

1.0 Program/Project Management Reporting will be by Work Breakdown Structure (WBS) as Follows:

Level 1 -- Project  
Level 2 -- Phase (i.e., design, construction, operation)  
Level 3 -- Tasks (as defined in the Statement of Work)

2.0 Baseline Plans

Discrete, measurable units of the proposed work are presented in the Baseline Plans. These plans provide a specific outline of what the Participant intends to do, how it is intended to be accomplished, and the time and cost involved. These plans are developed and submitted to serve as the standard against which status and progress can be measured during the performance period. The following are the baseline planning forms:

2.1 Federal Assistance Management Summary Report (Form EIA-459E).

This report is a single page form on which the Participant enters projected cost and activity data. The cost data to be entered must depict projected total costs for the life of the project on at least a quarterly basis. The activity data required is a delineation of the project's major milestones and bar charts displaying the projected schedule for attainment of these milestones. This form is used for both the baseline plan when required and for project status reporting.

2.2 Federal Assistance Milestone Plan (Form EIA 459B).

The milestone plan is used to portray the major milestones of the project in bar chart format. The purpose of the plan is to establish the Participant's time schedule for accomplishing planned events and milestones. It covers the life of the project and is to be organized by major project activities. It should be detailed to WBS level 3 and will include a milestone log as discussed in DOE Order 1332.2. Intermediate events and critical milestones are further identified in an attached "milestone log" and include the identification number, descriptive name of the event or milestone, and the scheduled date of completion.

2.3 Federal Assistance Budget Information Form (Form EIA 459C).

The "Federal Assistance Budget Information Form" is to be used by the Participant to provide summary level data on the proposed total project budget. The total project budget is broken down into Federal and non-Federal funds for each major activity and shall include a separate breakdown of the total budget for each level 3 activity by object class of expenditure (i.e., personnel or travel).

### 3.0 Status Reports

Status Reports provide the performance information required to determine program effectiveness and the information which DOE requires to maintain accountability for public funds. The reports are submitted according to the frequency indicated in Item A on the "Financial Assistance Reporting Requirements Checklist." The reports show actual costs, schedule progress, and total project status to date. When the status reports are compared with the baseline plans, accomplishments can be noted, problems become apparent, and corrective action can be taken. The following are status reports:

#### 3.1 Federal Assistance Management Summary Report (Form EIA 459E).

This report is a single page form on which the Participant provides summary cumulative cost and activity data for each reporting period.

More detailed instructions are on the back of the form. This form is used for both the baseline plan when required and for project status reporting.

#### 3.2 Federal Assistance Program/Project Status Report (Form EIA 459F).

This report is a single page form on which the Participant enters brief narrative discussion of the following topics: approach changes; performance variances, accomplishments, or problems; open times; and status assessment and forecast. Each of these topics is addressed, as appropriate, for a given reporting period and the report is submitted periodically, as required, during the life of the project.

#### 3.3 Financial Status Report (Standard Form 269).

This form is used to provide DOE with regular periodic accounting of project funds expended. The accounting may be on either a cash or accrual basis. Actual total expenditures and obligations incurred, but not paid, are reported for each reporting period for each major activity. They should correlate with those identified on the "Federal Assistance Milestone Plan" is required. Provision is made to identify the Federal and non-Federal share of project outlays for each identified activity. This report must also include an updated estimate of total anticipated costs for the subsequent reporting period.

### 4.0 Submission of Reports and Other Documents for DOE Review

#### DOE Review and Approval of Scientific and Technical Documents.

The Participant shall submit to DOE for review and approval all documents generated by the Participant, any Contractor or subcontractor, which communicate the results of the aspect of this work as embodied in the Financial Assistance Reporting Requirements Checklist, Item B, Technical Information Reports. This review and approval shall occur prior to submission for publication, announcement, or presentation. Such documents include those noted in Section 5.0 of this Attachment.

Unless otherwise stated, all such scientific and technical report deliverables required by the Cooperative Agreement will be submitted in draft form. DOE will be given mutually agreed to comments and finalize the report within 30 days.

All these documents require clearance by DOE Patent Counsel prior to publication, announcement, or presentation. The METC Contractor Reports Receipt Coordinator (Addressee "B" on the Report Distribution Addressee List) is responsible for obtaining patent clearance for all applicable technical reports identified on the Reporting Requirements Checklist. However, journal articles, conference papers and proceedings, etc., usually must be cleared by Patent Counsel in a relatively short period of time. Therefore, the Participant shall make the following direct distribution of those documents upon authorization by the COTR:

Furnish one copy each concurrently to the COTR (Addressee "A" on the Report Distribution Addressee List) and to DOE Patent Counsel at the following address:

U.S. Department of Energy  
Operations Office  
ATTN: Patent Counsel  
\_\_\_\_\_  
\_\_\_\_\_

All documents submitted for patent clearance shall be accompanied by a properly completed METC Form 138, "Request for Patent Clearance for Release of Contracted Research Documents."

All final copies of documents designated by the COTR for publication and/or announcement shall be prepared in accordance with the instructions entitled "Guidelines for Preparation of Reproducible Master (Camera-Ready) Copy of Reports" which will be furnished at a later date.

It is the intention of DOE to publish the following reports:

Topical Reports  
Final Technical Report  
Public Design Reports  
Economic Evaluation Report

#### 5.0 Technical Information Reports

This information is that knowledge or information (unlimited, limited, and classified) resulting from, or pertaining to, the conduct of research and development efforts. This information reports on progress or results of DOE-funded demonstration activities and usually is published as technical reports, journal articles, reprints, theses or dissertations, conference and symposium proceedings, or translations. This may include experimental data, theoretical data, analytical studies, and economic and energy use projections. This information is used by managers, scientists, researchers, and engineers engaged in scientific and

technological efforts, and is the basic intellectual resource for and result of such effort. Types of technical reports are described as follows:

- 5.1 The Technical Progress Report will summarize the work performed during a specific reporting period and include the technical and scientific results (both positive and negative) of that period. A draft Technical Progress Report will be required; DOE will review the draft report and provide comments within 30 days after receipt from the Participant. The Participant will then submit the report in final form within 30 days after receipt of DOE's comments.
- 5.2 Topical Reports, if required, will be defined in the Statement of Work (SOW). These reports usually provide a comprehensive statement of the technical results of the work performed for a specific task or subtask of the SOW, or detail significant new scientific or technical advances. If Topical Reports are to be prepared, DOE will first review the report outline and, once approved, subsequently review the draft report and provide comments within 30 days after receipt from the Participant. The Participant will then submit the report in final form within 30 days after receipt of DOE's comments.
- 5.3 The Final Technical Report is a technical account of the total work performed under the agreement. It is a comprehensive description of the results achieved and of the investigations undertaken and includes an analysis of the Participant's view and plan for marketing, commercialization, and technical readiness of the technology demonstrated. It must include tabulations of data, figures, photographs, and bibliographic citations in support of the investigations undertaken and conclusions reached. Where applicable, it summarizes all topical and technical progress reports. The Participant shall, prior to preparation of the draft, provide to DOE the report outline. Subsequent to approval of the report outline, the Participant will deliver a draft copy of the final report 60 days before the completion of the period of performance. The Government shall be allowed 60 days to review the draft copy and to notify the Participant, in writing, of agreement or recommended changes. If the Government does not agree or recommend changes within 60 days of receipt of the draft copy, the report shall be deemed acceptable. A camera-ready copy of the approved final report is due upon conclusion of the operations phase or termination of the Cooperative Agreement, whichever occurs first.

A definition of camera-ready copy and other copy preparation instructions are provided in Appendix 1, Attachment C.

In addition, at least the following deliverables are to be provided as components of the Final Technical Report:

#### 5.3 Critical Component Failure Report.

The data in this report will establish a basis for RAM analysis and confirm or modify assumptions that were made in the design

phase of the project. Furthermore, these data will serve as a data base for future plants for establishing component and system reliability, availability, and maintainability. Typically, the following items should be reported for each unit/equipment failure:

- o Failure identification.
- o Description of failure.
- o Disposition of failed item.
- o Action taken.
- o Remarks/recommendations/additional information.

Each piece of equipment should have a failure history report and a maintenance report.

### 5.3 Reliability, Availability, Maintainability (RAM) Analysis Data.

These data will provide RAM characteristics obtained from actual plant operation. They should be consistent in form with the above Critical Component Failure Report to allow for easy and direct comparisons.

### 5.3 Stream Data

The participant shall provide to the DOE a complete set of all nonproprietary stream data, including the measured flows, stream properties, and constituents at various operating conditions. This information is the final status of the information as reported in the Public Design Report.

### 5.3 Equipment List.

The Equipment List consists of a summary of the major equipment for the plant. Equipment is to be sorted by Flow Diagram, equipment type, and equipment number. General description data are to be provided for each equipment item, including, but not limited to, the number required for operation, size or capacity, major nonproprietary operating and design parameters, and manufacturer and/or vendor. This information is the final status of the information as reported in the Public Design Report.

### 5.3 Process Flow Diagrams

The participant shall include a complete set of nonproprietary Process Flow Diagrams which describe the plant configuration at the end of the demonstration period. This information is the final status of the information as reported in the Public Design Report.

## 6.0 Special Reports

### 6.1 Environmental Monitoring Outline (see Federal Register Notice, "Synthetic Fuels Corporation -- Final Environmental Monitoring Plan

Guidelines" attached to the PON for guidance in arriving at a mutually agreeable plan) (O/1,5/A,B) (frequency, number of copies, and addresses).

6.2 Environmental Monitoring Plan (O/1,5/A,B) (see 6.1 above).

6.3 Environmental Monitoring Reports (Q,Y, and A/1,5/A,B)

The results of sampling conducted under the Environmental Monitoring Plan (EMP) should be reported in quarterly, annual, and, if appropriate, test-series reports. Test-series reports should be used if the facility is to be operated under various configurations or with different feedstocks over discrete periods or if a phased approach to monitoring is being used. All sampling results obtained under a given operating condition would then be contained in a single document. Contents of the test-series report should include a summary of plant operations and sampling results, a description of any deviations from the Environmental Monitoring Plan, details regarding the sampling and analytical procedures, an analysis of the performance of pollution control units, and the results of all stream, ambient, and workplace sampling. The sampling results should be separated into compliance monitoring and supplemental monitoring.

Appendices of these reports should include the sampling and analytical data sheets, sampling and analytical methods summary, and a quality assurance/quality control program analysis. Quarterly and annual reports would still be required but would emphasize plant conditions and the types of sampling conducted during the reporting period rather than the results of sampling. These reports should contain a description of project status, a summary of scheduled and completed sampling, a discussion of any regulatory compliance issues, a review of QA/QC activities during the period, and copies of any compliance test reports submitted to regulatory agencies during the period.

If, on the other hand, the facility is not to be operated in discrete test series and a non-phased approach to monitoring is used, only quarterly and annual reports are required. These reports should then contain the information outlined above for the test-series reports. An appropriate reference for these documents is the "Joint DOE/EPA Guidance to SFC Project Sponsors for Environmental Data Management and Reporting."

Quarterly reports should be submitted within 60 days of the end of the calendar quarter. Annual reports should be submitted within 90 days of the end of the calendar year. Test-series reports should be submitted within 90 days of the end of the test series.

6.4 Project Evaluation Plans (Phases I and II/1,5/A,B) (project phases, number of reports, and addresses).

Within ninety (90) days after the beginning of the budget periods

for Phases I and II, the Participant will submit to the DOE for DOE approval a Project Evaluation Plan. This Plan will identify and describe the criteria by which the technical and economic feasibility of the project are to be measured. The Project Evaluation Plan as reviewed, revised, and approved by DOE will be used by the Participant for the preparation of a Project Evaluation Report to be submitted to the DOE at least 60 days prior to the end of the budget period for which the Project Evaluation Plan was prepared. The approved Plan will be used by DOE as the basis for the DOE decision to continue the project to the subsequent phase.

#### 6.5 Project Evaluation Reports (Phases I and II/1,5/A,B).

Formal project reviews will be conducted during each project phase.

Project Evaluation Reports will provide the basis for the decision to proceed to the next phase. These reports should describe in detail the project status and explain any deviations from the project management plan, milestone schedule, and cost plan. These reports are to be submitted 60 days prior to the completion of Phase I (Design and Permitting) and Phase II (Construction and Startup).

#### 6.6 Public Design Reports (Phases I and II/1,5/A,B).

The purpose of the Public Design Reports is to consolidate for public use all available nonproprietary design information on the project. Two separate reports are required. The first report is based on the preliminary design information and is due at the end of preliminary design. The second report is based on detailed design information and is due after completion of Phase I, 60 days prior to completion of Phase II. The second report should contain sufficient background information to provide an overview of the project and pertinent cost data. Since the scope of the reports is limited to nonproprietary information, their content will not be sufficient to provide a complete tool in designing a replicate plant. However, these reports will serve as a reference for the design considerations involved in a commercial-scale facility. An example of the detailed design report is "Great Plains Coal Gasification Plant Public Design Report," DOE/CH/10088-1874.

In addition, at least the following deliverables are to be provided as components of the Public Design Reports:

##### 6.6.1 Process Flow Diagrams

The Participant shall provide the DOE a complete set of nonproprietary Process Flow Diagrams with all updates and modifications.

##### 6.6.2 Stream Data Report

The Participant shall provide to the DOE a complete set of all nonproprietary stream data. This would include both the expected values and ranges of flows, stream properties, and constituents at various operating conditions.

### 6.6.3 Equipment List

The Equipment List consists of a summary of the major equipment for the plant. Equipment is to be sorted by Flow Diagram, equipment type, and equipment number. General description data are to be provided for each equipment item, including, but not limited to, the number required for operation, size or capacity, major nonproprietary operating and design parameters, and manufacturer and/or vendor.

### 6.7 Environmental Report (to be used in order to complete NEPA evaluation prior to initiation of detail design/1,5/A,B).

The Participant submit the environmental information specified in Appendix J of the Clean Coal Technology solicitation. This detailed site and project specific information will be used as the basis for site specific NEPA documents to be prepared by DOE for each selected project. These documents shall be prepared, considered, and published in full conformance with the requirements of 40 CFR, Parts 1500 to 1508, and in advance of a go/no-go decision to proceed beyond preliminary design. Federal funds for the Clean Coal Technology Program will not be provided for detailed design, construction, operation, and/or dismantlement until the NEPA process has been successfully completed.

### 6.8 Program Income/Revenue Report as described in Schedule Article III, paragraph D (Y/1,4/A,B).

### 6.9 Federal Cash Transactions Report (SF272) to be used for advanced payment only (M/3/B).

### 6.10 Technical Conference Papers and Journal Articles (A/1,3/A,B).

Publication in open literature is desirable; however, DOE requires a prepublication review and patent clearance. Copies of the proposed papers or articles must be provided to DOE as identified in Part 2 above.

### 6.11 Public Information Release (A/1,5/A,B). See Article IX of this Cooperative Agreement.

### 6.12 Conference Record (A/1,3/A,B).

The Conference Record documents for the DOE Contracting Officer's Technical Representative (COTR), DOE Contracting Officer, and the Participant an understanding of significant decisions, direction or redirection, or required actions resulting from meetings with DOE representatives. It is required for any meeting, conference, or phone conversation in which a decision is made that may significantly change the schedule, labor, cost, or technical aspects of the contractual agreement or the approved base line plans. The report shall contain the following information as applicable:

- o Report title ("Conference Record"), number, and the date

- prepared.
- o Agreement title and number and the Participant's name and address.
- o Date of meeting or telephone conversation with a list of those involved and their titles.
- o Subject(s) discussed, decisions reached, and directions given.
- o Variances from previous directions and conclusions.
- o Required actions.
- o Distribution.
- o Signature of preparer.

#### 6.13 Hot Line Report (A/1,4/A,B).

The "Hot Line" Report may be used to report a major breakthrough in research, development, or design; an event causing a significant schedule slippage or cost overrun; achievement or failure to achieve an important technical objective; or any requirement for quickly documented direction or redirection. The report is submitted by the most rapid means available, usually electronic, and should confirm telephone conversations with DOE representatives. Identification as a "Hot Line Report" serves notice at each link in the delivery chain that speed in handling is required. Unless otherwise agreed by the parties involved, DOE is expected to take action and respond in a similarly expeditious manner. The report should include:

- o Participant's name and address.
- o Agreement title and number.
- o Date.
- o Brief statement of problem or event.
- o Anticipated impacts.
- o Corrective action taken or recommended.

In addition to those incidents noted above, special attention should be given to using Hot Line Reports to document the incidents listed below.

- o Any fatal or imminently fatal injury, accident, or any incident involving hospitalization of five or more persons is to be immediately reported.
- o Any significant environmental permit violation is to be reported as soon as possible, but within 12 hours of incident.
- o Other incidents that have the potential for high visibility in the media are to be reported as quickly as possible, but no later than 12 hours. When an incident is reported in accordance with the following two items, the participant shall conduct an investigation of its cause and make an assessment of the adequacy of resultant action. A written report is required on a schedule to be established at the time of the initial report.
- o Any unplanned event which is anticipated to cause a schedule slippage or cost increase significant to the project is to be reported as soon as possible, but within 5 working days.
- o An incident which causes a significant process or hazard control system failure, or is indicative of one which may lead to any of the above defined incidents, is to be reported as soon as possible, but within 5 working days. When an event results in

the need to issue a written or verbal statement to the local media, the statement is to be cleared first, if possible, by the METC Public Information Officer and coordinated with the COTR.

## 7.0 Reports Called for in Statement of Work

The following deliverables/reports called for in the Statement of Work, Attachment A:

### 7.1 PHASE I

#### 7.1 Project Management Plan (0,A/1,5/A,B)

A detailed Project Management Plan shall be provided in accordance with the guidelines in Appendix 1 to Attachment A.

The plan shall be updated as appropriate to reflect significant changes to the project base line.

### 7.2 PHASE II

#### 7.2 Project Management Plan (A/1,5/A,B)

The plan shall be updated as appropriate to reflect significant changes to the project base line.

#### 7.2 Plant Start-Up Plan (A/1,5/A,B)

The Participant shall prepare a Plant Start-Up Plan. The plan will be defined by the system descriptions (SD's) and a plant start-up schedule. The boundary of each SD will be identified on appropriate drawings. The plant start-up schedule incorporating the SD's will be developed after completion of a list of SD's during Phase II. The plan will be submitted to the DOE at least 60 days prior to its implementation.

#### 7.2 Test Plan (A/1,5/A,B)

The Participant shall develop a Test Plan for the demonstration period of the facility. The Test Plan will be designed to provide the data base and experience to be applied to the detailed design, operation, control and maintenance of large-scale commercial plants.

The Test Plan is to be developed in Phase II and submitted to the DOE for approval at least 60 days prior to the commencement of Phase III.

#### 7.2 Start-Up and Modification Report (A/1,5/A,B)

A Start-Up and Modification Report shall be provided to the DOE for review within 60 days following the completion of

plant start-up. Any process or equipment modifications made to the originally reported design of plant, as a result of late design changes or deficiencies encountered during commissioning and start-up activities, should be documented. The scope of the report should:

- o Describe the problem with the particular process or item of equipment.
- o Identify the modification that was implemented to correct the problem.
- o Evaluate the impacts of the modification.
- o Document the cost of the modification.

The start-up activities should also be documented giving information such as:

- o Planned and actual start-up schedule.
- o Production rate buildup.
- o Environmental data.
- o Cost data on start-up and start-up modifications.

## 7.2 Performance Test Reports (A/1,5/A,B)

Performance tests are tests carried out on process units to verify that each unit will operate as designed before the unit is accepted from the vendor and turned over to the plant operating staff. If performance tests are carried out, the results are to be forwarded to the DOE. Typically, these tests will provide the operating data (flow rate, temperature, pressure, analytical data, etc.) needed to confirm the performance of the unit.

## 7.3 PHASE III

### 7.3 Project Management Plan (A/1,5/A,B)

The plan shall be updated as appropriate to reflect significant changes to the project base line.

### 7.3 Disposition Plan (A/1,3/A,B) (The Disposition Plan is not required if disposition of facility were not proposed.)

### 7.3 Economic Evaluation Report (A/1,5/A,B)

The DOE requires as a deliverable a report on the Participant's results of an economic analysis and evaluation to commercialize the demonstrated technology. This report should be a natural result from the Participant's commercial plant design. The report should include but not be limited to costs associated with:

- o Capital equipment.
- o Land.
- o Coal.

- o Water.
- o Electricity.
- o Operating Costs.
  - Personnel.
  - Expendables.
  - Fees.
- o Project contingency.
- o Process contingency.
- o Construction costs.
- o Interest rates assumed.

This report shall be submitted to the DOE no later than six months after the completion of Phase III, upon earlier completion of the Cooperative Agreement, or upon termination of the Agreement, whichever occurs first.

Appendix N

**ENVIRONMENTAL MONITORING PLAN GUIDELINES**

NOTICE: THE PLAN DESCRIBED IN THIS SECTION  
SHOULD NOT BE FURNISHED WITH THE PROPOSAL;  
IT IS INTENDED FOR THE PROPOSER'S INFORMATION  
TO ASSIST IN PLANNING THE PROJECT AND WILL BE  
REQUIRED FOLLOWING AWARD OF A COOPERATIVE  
AGREEMENT.

## GUIDELINES FOR ENVIRONMENTAL MONITORING PLAN

### I. PURPOSE

The Department of Energy (DOE) views the identification and characterization of areas of concern and the development of an information base for the assessment and mitigation of impacts associated with the replication of Clean Coal Technology projects to be a fundamental purpose of environmental and health monitoring and an important component of the demonstration project. Monitoring should identify the environmental constraints and/or advantages of potential commercial versions of the demonstrated technology. In addition, environmental monitoring may be necessary to quantify the project-specific and site-specific environmental impacts predicted in the National Environmental Policy Act (NEPA) documentation, to detect any environmental and health problems requiring remedial action, and to confirm the performance of environmental mitigation measures implemented as part of the project. Toward these ends, DOE requires that the participant perform a broad range of monitoring activities, to the extent appropriate to the circumstances of the project, related to potential environmental and health impacts of the project and technology, and to document these monitoring activities in the form of an Environmental Monitoring Plan (EMP).

## II. ORGANIZATION AND APPROACH

DOE requires that the Participant complete an Environmental Monitoring Plan and specifically address three categories of monitoring. The Plan shall be developed, in consultation with DOE, in several stages, including the EMP Outline (EMPO), and the more detailed EMP. The three categories are defined in terms of the objectives for monitoring and serve as a basis for systematic planning and analysis. The three categories are as follows:

Class I, Environmental Characterization Monitoring, addresses the environmental characteristics of the clean coal technology and associated facilities, processes, and activities. This monitoring is intended to develop the information base for identification, assessment, and mitigation of environmental problems associated with replication of the technology. Activities to support this objective may include, but are not limited to, measurements of feedstocks, operating conditions, discharges, ambient environmental conditions, and impacts on health and ecological systems. Environmental characterization emphasizes the special attributes of the technology and pollutants specific to it, rather than attributes common to existing commercial technologies. The Participant will be required to identify the salient process and operating parameters that are likely to affect environmental discharge rates and compositions, waste generation, and other relevant environmental characteristics of construction and operation. The EMP must show how information about those parameters will be reported and related to analyses of the monitoring data. Monitoring of ambient environmental concentrations and impacts is required where necessary to assist

characterization of the source and/or to assess the transport and effects of pollutants or other impacts of the technology that are poorly understood.

Class II, Compliance Monitoring, is the monitoring required by other agencies of Federal, state and local government (other than DOE) to satisfy statutes and regulations concerning the environment and occupational and public health and safety, and terms of leases, permits, grants, and other requirements. The EMP documents the extent of Compliance Monitoring activities, provides for reporting of relevant results to DOE, and shows their relationship to Class I and III objectives.

Class III, Supplemental Environmental Impact Monitoring, addresses the potential need to identify and quantify environmental impacts predicted in NEPA documentation and to confirm the performance of mitigation measures. It deals with project- and site-specific environmental impacts. The Participant is required to analyze the monitoring required to identify and confirm potential environmental and health impacts identified in the project environmental information furnished pursuant to Section 3.27.3 and Appendix J of the PON and in subsequent NEPA documentation. Based on those impacts and, in consideration of planned Compliance Monitoring, an identification should be made of where supplemental impact monitoring may be necessary. This objective may or may not require any monitoring in addition to Compliance Monitoring. In most cases, it is likely that monitoring to meet Class III objectives will be satisfied by Compliance Monitoring; i.e., supplemental monitoring will not normally be required. However, it is possible that special needs to ensure that potential environmental impacts will not occur or to ensure the

performance of mitigation measures may arise in the course of the NEPA process, resulting in additional monitoring requirements. In any case the EMPO and EMP must include an analysis and justification for the level and type of monitoring proposed, including the case of no additional monitoring.

Detailed description of monitoring activities and reports may be organized in the EMP and EMPO in terms of functional activities according to process, media, sampling location, measurement method, etc. For planning purposes, these activities should be cross-referenced to the three Categories of objectives described above. It is anticipated that some overlap may occur among the monitoring, data analysis and reporting activities addressed by the three categories of objective, but unnecessary redundancy of actual monitoring is not intended.

The Participant should consider the need to integrate monitoring aimed at the three categories of objectives and across different media, and to provide correlative information among activities. Different types of monitoring data (e.g., "end-of-pipe" discharge vs. ambient measurements) need to be interrelated in terms of their spatial and temporal relationships and integrated with operational data for purposes of planning, data analysis, and reporting. Where appropriate, it is recommended that the EMPO and EMP include a section dealing with those integration issues.

Monitoring generally should be considered for all phases of the project, including pre-construction (baseline), operation, shut-down and site

reclamation, as well as performance of mitigation measures, where appropriate. As a result of its responsibilities under NEPA, DOE may have to consider environmental impacts of operation of project facilities after completion of the ICCT demonstration phase and, where appropriate, disposition of the facility. Depending on determinations made in the NEPA process about potential adverse environmental impacts resulting from the ICCT Demonstration Project, the EMP may have to consider and analyze whether and to what degree monitoring is required to ensure that predicted safety, limitations of environmental impact and performance of mitigation measures will continue to be achieved following completion of the project. (While post Phase 3 monitoring beyond Compliance Monitoring requirements is not expected to be routinely needed, the Offeror should be aware of this possibility in some exceptional cases.)

In the case of uncertainties about the generation of pollutants, their transport to media, or environmental effects, a phased approach to monitoring may be considered in which initial characterization and monitoring is used to determine the need and scope for further monitoring activities. Participants should indicate their general approach to determination of need and scope in the EMPO and indicate analyses, reports, decision milestones, and points for DOE review in the EMP.

Relevant information from the EMPO will be included in NEPA documentation prepared by DOE for each project and made publicly available. The EMP will reflect additional monitoring requirements that may be identified in the NEPA process. Development of the EMP is expected to take place along with design

of the project. Elements of the EMP may be modified during the course of the project as additional information becomes available upon which to modify plans.

### **III. IMPLEMENTATION**

#### **3.1 TIMING**

The EMP shall be developed, in consultation with DOE, in several stages. The Participant is required to develop an EMP Outline (EMPO) that must be found acceptable to DOE by a date to be fixed in the Cooperative Agreement. A draft of the EMPO must be included with the environmental information delivered to DOE pursuant to Section 3.27.3. The EMP must be developed and found acceptable to DOE by a date to be fixed in the Cooperative Agreement.

It should be recognized that the EMP is subject to revision and updating as the project continues. It is recognized that baseline environmental monitoring may be required to satisfy NEPA or other environmental requirements, and that such monitoring may be initiated by the Participant in anticipation of requirements prior to acceptance by DOE of the EMPO and EMP.

#### **3.2 CONTENTS OF EMPO**

The EMPO should be a general description of the Participant's monitoring tasks and the rationale for the scope and types of monitoring proposed. It shall specify the scope of the monitoring to be performed during each phase

of the project. The same objectives and elements described for the EMP in the following section generally should be addressed in the EMPO, but in less detail. (The level of detail necessary depends on the scope of the ICCT Demonstration Project, anticipated level of environmental impacts, project schedule, etc.) The EMPO should include a list of substances to be monitored, indication of the general locations where measurements and monitoring will take place, and general types of sampling techniques with duration and frequency.

### 3.3 CONTENTS OF EMP

The EMP will update the general information in the EMPO and specify the details regarding sampling locations, monitoring parameters, and procedures. It should address the following to the extent applicable to the project:

3.3.1 EMP Purpose and Scope This section should define the overall approach to the monitoring and measurement activities. If a phased approach (i.e., some activities contingent on previous results) is to be used, the logic flow and decision criteria should be discussed. The scope of the monitoring should be described in terms of both duration and environmental media considered.

3.3.2 Project/Process Description The technology should be described, with reference to appropriate process flow diagrams. Process and discharge streams should be identified, along with description of pollution control systems.

3.3.3 Environmental Characterization The overall objective related to this class of monitoring should be to develop the information base for identification, assessment, and mitigation of environmental problems associated with the replication of the technology. The specific plans to meet these objectives should be described. The parameters that establish process operating conditions and determine environmental discharge characteristics should be defined. Finally, the schedule for this monitoring should be described in terms of duration and frequency.

3.3.4 Compliance Monitoring The permits and the conditions of the permits should be presented in this section. The monitoring requirements of the permits should be discussed in terms of both the type of monitoring (source, ambient, etc.) and the timing (i.e., phase of the project). This provides the basis for determining what types of additional monitoring may be required to meet Class I and Class III objectives.

3.3.5 Supplemental Environmental Impact Monitoring The overall objective related to this class of monitoring should be to identify and confirm environmental impacts and performance predicted in the NEPA documentation. Issues identified in the NEPA process should be analyzed in terms of monitoring required to establish that predicted EHSS impacts have not been exceeded and that mitigation measures are performing satisfactorily. The specific plans to meet these objectives should be described. Finally, the schedule for this monitoring should be described in terms of duration and frequency.

3.3.6 Integration of Monitoring Activities In order to eliminate any redundancy between Class I, II, and III monitoring, all monitoring activities should be integrated. Specific monitoring activities should be broken down by project phase and monitoring media. Tables should be prepared that show the parameters to be monitored, the stream/sampling point identification, the frequency of sampling, and the value to be reported (e.g., average, min/max, range).

3.3.7 Data Management & Reporting This section should describe the data management system to be used. The reporting schedule should be given (e.g., quarterly and annual reports). The content and format of the reports should be described, including the types of analyses to be provided (e.g., heat and material balances, trace element distribution, pollution control equipment performance).

Appendix 0

**DETAILED MANAGEMENT PLAN**

## APPENDIX O

### MANAGEMENT PLAN

#### INTRODUCTORY NOTE

Provide a short explanation of the management philosophy and interface between the Participant and other project team members, with a definition of project management teaming arrangements, describing briefly who manages day-to-day activities and how the Participant will direct the project performance.

#### 1. Project Responsibility

Delineate the Participant's responsibilities to manage, design, engineer, procure, construct, test, start up, operate, shutdown, and terminate the facility.

#### 2. Organization and Staffing

Explain in detail how the Participant will be staffed to coordinate and direct the activities of the various design, engineering, construction, operation, and terminating organizations. Provide information on how the project team members will interface or become part of the Participant's organization. Provide details on the locations (city and state) of the project team members as well as those at the facility site.

Provide an organization chart and detailed descriptions of the functions, and responsibilities of all levels of management, from senior management through supervisors.

#### 3. Executive Management

Explain in detail and by organization chart the executive management and interrelationship, including chain of approval, for all affiliated organizations.

#### 4. Function Management Details

Explain how the project is supported and how it functions, including the policies and procedures that govern these functions in the Participant's organization as supported by the project team members.